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ADDRESSES AND ORIGINAL ARTICLES

THE USE OF BCG IN THE VACCINATION OF CALVES AGAINST TUBERCULOSIS.

AN INTERIM REPORT.

By J. Basil Buxton, M.A., F.R.C.V.S., D.V.H.,
PROFESSOR OF ANIMAL PATHOLOGY IN THE UNIVERSITY OF CAMBRIDGE;
AND
A. Stanley Griffith, M.D. Vict., Ph.D. Camb.,
MEMBER OF THE SCIENTIFIC STAFF, MEDICAL RESEARCH COUNCIL.
(*From the Field Laboratories, University of Cambridge.*)

In 1920 Calmette and Guérin[1] reported a new method of immunising cattle against tuberculosis. The vaccine used was derived from a bovine strain of the tubercle bacillus which had been cultivated for many years on potato soaked in 5 per cent. glycerin ox bile. Originally of full virulence the strain, under the constant influence of the bile, underwent a progressive debasement of its virulence so that after 230 subcultures on this medium—the subcultures were made every 20–25 days—the organism had become entirely harmless, a quality which, according to Calmette, it has retained ever since. He regards it as an artificially attenuated strain with fixed characteristics.

Unlike other vaccines which are made with human, bovine, or avian strains of varying degrees of attenuation, and which are still capable of provoking the formation of tubercles and of spreading tuberculous infection, B C G,* it is claimed, is attenuated to such a degree that not only is it incapable of producing progressive tubercles but also of regaining its original virulence. The further claim is made for B C G that, although the strain is entirely deprived of its original virulence, it has the power, when introduced into the bodies of young animals, to produce a firm resistance against a subsequent infection with virulent strains of the tubercle bacillus.

Calmette[3] holds the view that this immunity is dependent upon the persistence of B C G in the lymphatic system. The process is, therefore, one of "premunition" and the duration of the immunity is inseparable from the presence of the living vaccinating organisms in the tissues; this immunity is lost when the vaccinating bacilli are eliminated from the body by the natural channels or are destroyed through digestion by the body cells. This disappearance of B C G, according to Calmette, is effected in the bovine animal during the second year after vaccination and in laboratory animals after six months or less.

In their original publication[1] Calmette and Guérin recommended the vaccination of calves by the intravenous route, but they subsequently replaced this by the subcutaneous method.[2] They claim that if their instructions are carried out "in a herd infected with tuberculosis, without changing the routine of the farm and without modifying the methods currently used for raising the calves, it is possible by the vaccination of the calves during the first 15 days of their lives and by revaccinating them each year, to free the establishment from tuberculosis in five years." In their more recent publications[3] they have introduced the further modification that the calves should be vaccinated as soon after birth as possible and at the latest by the fifteenth day. For one month following vaccination they must be rigorously isolated from any chance of natural infection. They point out that, in an infected establishment, vaccination alone is insufficient; it must be reinforced by suitable hygienic measures—namely, effective isolation of the calves immediately after birth and their nourishment with milk which contains no living tubercle bacilli.

Naturally the claims put forward by Calmette and Guérin have evoked a widespread interest in B C G, and numerous workers have undertaken investigations with a view to their proof or disproof. A review of the mass of literature which is now available indicates that the general consensus of opinion in Europe tends to support Calmette and Guérin, whereas in America several workers have not only failed to substantiate their conclusions, but have made definite pronouncements against their methods. The majority of the experiments have centred around the two points which are of especial importance—namely, the innocuousness of the vaccine and its efficacy as an immunising agent.

INNOCUOUSNESS OF THE VACCINE.

It was not maintained, even by the originators of B C G, that the organism is incapable of producing lesions in the animal body, but it is claimed that such lesions are entirely benign and incapable of developing into active centres of tuberculosis. Calmette[4,5] states that when B C G is inoculated into laboratory animals in very small doses no definite changes can be detected, but that larger doses (5 mg. or more) may produce visible lesions of a strictly benign character. It has been further shown that B C G can be recovered from these lesions but is still incapable of setting up a progressive tuberculous infection on reinoculation into fresh animals.

The Ukrainian Commission (Tzechnovitzer)[6,7] tested the innocuousness of B C G in laboratory animals by different routes and in varying doses. 145 guinea-pigs were inoculated with from 5 to 300 mg.; 50 were killed and subjected to careful post-mortem examinations. In all these animals there were signs of a local adenitis and of giant-cell formation, but never any definite tubercle formation. In the rabbit, the evidence from post-mortem examinations of 63 animals inoculated with varying doses also demonstrated the harmlessness of the organism. Similar experiences have been reported by other workers (Kraus, Gerlach, Kolle, Griffith, Cummins, Jensen, Rankin, Park, Ascoli, King, &c.).

Watson,[8] on the other hand, obtained results which appeared to indicate that B C G could produce progressive tuberculosis in guinea-pigs. Petroff, Branch, and Steenken[9] claim that by passage through the testicle they were able to dissociate B C G into two types; the one strain provoked in the guinea-pig lesions of the type usually associated with B C G without generalisation, whilst the other caused death from generalised tuberculosis. Up to the present all attempts to confirm these observations have failed.

The results of the majority of workers show that B C G is incapable of producing tuberculosis in bovine animals. Watson and his collaborators,[10,11] however, assert that B C G cannot be regarded as entirely innocuous for cattle, since the vaccinal lesions are sometimes pathogenic for guinea-pigs.

Dreyer and Vollum[12] have reported in The Lancet that B C G may acquire virulence when grown in the depth of broth. Two strains were tested. The deep bouillon subcultures of B C G (I) produced progressive tuberculosis in all the guinea-pigs and rabbits inoculated. No animal tests were apparently made to

* The term Bacillus Calmette-Guérin or B C G was applied by its originators to this special strain of the tubercle bacillus.

establish the avirulence of the culture suspension actually used to sow the first series of broth flasks and it is not certain therefore that the virulence was acquired in the broth. The experiments with the second strain (B C G 359), which have given irregular results, are incomplete and no final conclusion can be drawn until the characters and virulence of the bacilli recovered from the inoculated animals have been ascertained.

EFFICACY OF THE VACCINE.

The appraisement of the efficacy and duration of immunity following B C G vaccination has led to much discussion and the problem cannot be regarded as solved. The preliminary experiments of Calmette and Guérin [1 4] on young cattle indicated that after vaccination these animals possessed a solid immunity against a test dose of virulent organisms. Subsequent experiments on smaller animals has shown that it is necessary to recognise a distinction between experiments in laboratory animals and those in the bovine species. It seems to be clear that in rodents, the immunity persists for a few weeks at most. Some observers doubt whether B C G offers any protection to these animals.

Numerous observers have now completed experiments on calves on lines simlar to those of Calmette and Guérin with rather varying results. Rankin [13] and his collaborators vaccinated 60 calves and kept 50 as controls. After a year 25 vaccinated and 25 controls were tested by the intravenous route. Six controls died of generalised tuberculosis; the others, killed after three and a half months, presented more or less active lesions. One of the vaccinated animals died of acute tuberculosis; the rest were killed after 15 months, when four showed several small calcified or healed lesions. Twenty-five vaccinated and 25 controls were placed in an infected herd and fed on infected milk. Five of the controls died of tuberculosis; the remainder when slaughtered showed active caseating lesions. Seventeen of the vaccinated animals were entirely free from lesions, whilst eight had small non-progressive lesions.

Lange and Wethmar [14] vaccinated calves and sheep by feeding and by subcutaneous inoculation witl. B C G. In two experiments with new-born calves and lambs vaccination by feeding failed to protect against a relatively weak intravenous infection four to six months later. Also, vaccination by subcutaneous inoculation failed completely in some animals, in spite of the use of an attenuated test strain of bovine bacilli. The majority of the subcutaneously vaccinated animals, however, showed a considerable degree of resistance to such a weak test strain, though not sufficient to inhibit the production of lesions.

Forssner [15] and his co-workers tested vaccinated calves 8–12 months later and concluded that B C G gave a certain protection but not so much as Calmette claims. King [16] tested 16 vaccinated and 17 control calves by subcutaneous or intravenous inoculation; the vaccinated animals developed more or less progressive lesions but they were less extensive than in the controls. Analogous results have been obtained by Gerlach,[17] Ascoli,[18 19] Tzechnovitzer,[6 7] and Haring, Traum, Henry and Hayes,[20] &c. Shroeder and Crawford [21] concluded that vaccination with B C G merely inhibits the extension of the tuberculous infection. Watson and his co-workers,[8 10 11] have reported even less favourably on the efficacy of vaccination. They admit that in trials of short duration, B C G seems to exert a retarding action on the development of the lesions, but in longer trials it fails to confer any appreciable immunity.

The efficacy of B C G under ordinary farm conditions has also been reported upon by several workers. For example, Brinet [22] over a period of six years vaccinated 300 calves which were maintained in infected buildings. Of these animals, 35 of four years or over were slaughtered without any sign of a tuberculous lesion which would cause a condemnation of the carcass by a meat inspector. A single animal was affected with acute tuberculosis, but this had not been vaccinated until a month after birth.

Ascoli [19] has vaccinated more than 3000 animals by the subcutaneous route and the results, controlled by post-mortem examination, are stated to have been very satisfactory.

The Authors' Experiments.

Two preliminary immunity experiments performed by one of us (A. S. G.) in 1926, one with B C G and one with attenuated human bacilli, showed that the resistance of a calf could be raised to such a degree as to enable it to resist completely the intravenous inoculation of 1·0 mg. of fully virulent bovine bacilli. In view of this result and having in mind the great economic importance of an entirely effective method of immunising calves to withstand infection under natural conditions, it was deemed desirable to pursue the inquiry further. The following experiments were accordingly undertaken in order to ascertain whether or not vaccination with B C G can be relied upon to raise the resistance of calves to tuberculosis and the best method to employ.

At first an attempt was made to obtain calves a few days old from herds supposed to be free from tuberculosis. This was found to be impracticable for several reasons, and later animals were purchased from various sources, kept for several weeks and before vaccination submitted to the double intradermal tuberculin test. Although this procedure differed from that recommended by Calmette and Guérin it was felt that, if found satisfactory, it could be more readily applied on a large scale under farm conditions in this country than the original method. Owing to the difficulty in obtaining suitable calves it was not possible at first to carry out the experiments on a large scale, and this fact also accounts for the irregularity which is apparent in some instances in the intervals between the administration of the vaccine and the resistance tests.

Effects of B C G.

Normal calves.—Three calves inoculated intravenously died or were killed 21, 27, and 106 days after injection; the autopsies showed no macroscopic tuberculous lesions; B C G was recovered in culture from the first two calves but not from the last. One calf inoculated subcutaneously died 47 days later; the autopsy showed an encapsulated caseous and softened local lesion and no sign of disease elsewhere; B C G was recovered in culture from the local lesion and the prescapular and bronchial glands.

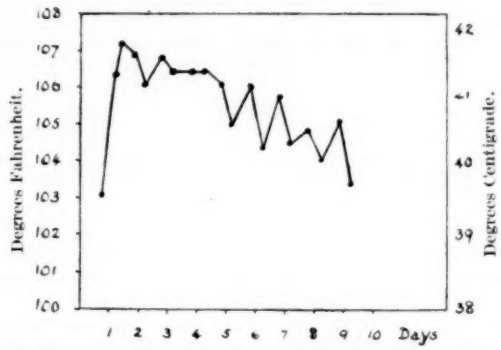
Two calves were fed with B C G; one died 76 days, the other was killed 72 days, after the last dose; neither showed any sign of tuberculosis; cultures from the mesenteric glands did not yield colonies of B C G.

The 51 vaccinated calves were all in good health and condition when injected with the test bacilli. Ingestion or subcutaneous inoculation of B C G did not affect the general health of the calves. Intravenous inoculation of small doses of B C G also was generally well borne, and in a few instances only caused a slight rise of temperature for a day or two beginning 18 to 24 hours after injection. Large doses given intravenously usually caused illness,

with increased respiration and pyrexia, beginning 21 to 24 hours after injection and lasting about a week. The symptoms passed off and the calf was generally perfectly well again three weeks after inoculation.

One calf (calf 61, fifth series) reacted strongly to the initial intravenous dose (10·0 mg.) of B C G, the temperature

FIG. 1.



Temperature chart following second vaccination. 110 mg. B C G iv. given at 3 P.M. on first day.

rising to 104° F. at the fifteenth hour and remaining high for two days. The calf died 19 days later and was found to have spontaneous tuberculosis.

Vaccinated calves.—A second injection of B C G given three weeks to a month after the first was not infrequently followed by an acute rise of temperature, increased respiration, and general malaise, sometimes grave, the symptoms lasting about a week and then gradually subsiding (Fig. 1).

Resistance of Vaccinated Calves.

The intravenous inoculation of the test bacilli produced in the great majority of the B C G vaccinated calves an acute febrile reaction with general malaise. The temperature began to rise at 15 to 18 hours, and was maintained at a high level (maximum sometimes over 107° F.) for one to three days. The reaction was similar to but more prolonged than that produced by the subcutaneous injection of tuberculin in a tuberculous animal.

In untreated calves after intravenous inoculation of living virulent tubercle bacilli the temperature does not generally begin to rise until the end of the first or the beginning of the second week, after which it is maintained at a high level until the death of the calf.

Method of testing resistance.—As a result of experience gained from the preliminary experiments it was decided to test the calves by the same method of injection and with the same dose of bovine bacilli. The test bacilli were taken from young—5 to 7 days old—actively multiplying serum or egg cultures and were finely emulsified in salt solution. One milligramme of culture has been estimated to contain at least 40 million bacilli. Calves inoculated intravenously with 1·0 mg. of virulent bovine bacilli die of miliary tuberculosis and consolidated lungs in an average period of 20 days. Experience showed that the test was too severe to bring out clearly the slighter grades of increased resistance in young calves; the dose was, therefore, reduced for the later series of experiments to 0·25 mg. While the severity even of this test was appreciated it was felt that animals which were relatively resistant to such enormous doses might resist altogether the much milder infection normally met with under natural conditions.

Preparation of the vaccine.—The cultures of B C G were grown upon coagulated 5 per cent. glycerin egg and used when they were from 3 to 7 days old. The growths were carefully lifted from the medium with a platinum spatula, placed in a tared bottle or tube and weighed. On glycerin egg B C G grows luxuriantly, producing dry crumbly masses which must be brought into a fine suspension before administration. This was done as follows.

A convenient amount of the culture was taken and thoroughly ground between sterile ground glass plates with 2 or 3 drops of sterile salt solution; a thick, smooth, creamy paste was thus produced which was thinned by the gradual addition of salt solution, and then pipetted off into a test-tube; more culture was taken and the procedure was repeated until all the culture was emulsified; the thick suspension was then diluted with salt solution to the desired strength. In this way a fine homogeneous suspension can be made which is altogether free from coarse clumps of bacilli.

FIRST SERIES.

Towards the end of 1927 six calves were vaccinated with B C G, one by intravenous and two by subcutaneous inoculation and three by feeding. Two of the calves died and one was killed during the period of immunisation. The protocols of these calves are given elsewhere. The remaining three vaccinated calves together with two untreated calves, one of which had reacted to tuberculin, were tested as to their resistance to tuberculosis on Feb. 13th, 1928, by the intravenous inoculation of culture of a highly virulent bovine virus (No. 18 B.V.), the dose for each calf being 1·0 mg. The results are summarised in Table I.

Summary.—The normal control calf died in 16½ days of red hepatisation and severe miliary tuber-

FIG. 2.

Heifer 3 and her calf (July, 1930).

culosis of the lungs; the thoracic glands were extensively tuberculous, and the liver and spleen showed early foci.

Calf 11, which had reacted to the double intradermal tuberculin test, was included in the series for the purpose of comparing the reaction and effects produced by intravenous inoculation of living tubercle bacilli in a spontaneously tuberculous calf with those in a normal calf and vaccinated calves. The calf exhibited the phenomena of hyperallergy; the temperature rose to 107° F. on the day following the test dose, and was maintained at a high level until the death of the calf eight days later from acute pneumonia. At the necropsy a small tuberculous spontaneous lesion was found in a retropharyngeal gland.

Calf 5, vaccinated by subcutaneous injection, lived three days longer than the normal control and showed severe tuberculosis of the thoracic organs and no macroscopic lesions elsewhere. The resistance of this calf was little, if at all, higher than that of the control.

TABLE I.—*First Series.*

No. of calf.	Method of vaccination.	Dose of B C G.	Duration of life after resistance test.	Result.
3	Ingestion by pipette.	1·0 g. in 6 doses. Nov. 28th to Dec. 5th, 1927.	3 years.	Alive and in good condition February, 1931.
4	Intravenous.	10·0 mg. Nov. 29th, 1927.	D. 41 days.	Severe tuberculous caseating pneumonia; thoracic glands enlarged, no caseation. No macroscopic lesions elsewhere.
5	Subcutaneous.	100·0 mg. Dec. 8th, 1927. 250·0 mg. Jan. 18th, 1928.	D. 194 „	Lungs extensively consolidated and closely beset miliary tubercles. Thoracic glands enlarged, firm, showed early caseation. No lesions visible elsewhere.
11	Reacted to tuberculin.	—	D. 8 „	Acute pneumonia.
12	Normal control.	—	D. 164 „	Consolidation and submiliary tuberculosis of lungs. Thoracic glands greatly enlarged. Minute grey foci in liver and kidneys.

Calf 4, vaccinated by a single intravenous injection, died in 41 days of tuberculous pneumonia; there were no macroscopic lesions in the abdominal organs or in the peripheral lymphatic glands. The resistance of this calf was definitely increased, though the increase was not of a high order.

Calf 3, on the other hand, which had been fed with B C G, exhibited a high degree of resistance. She showed no symptoms of illness after the test dose and the temperature did not begin to rise until the twenty-first hour; the maximum, 105·4°, was attained in 24 hours, at which level it remained for 24 hours and then gradually subsided. The calf grew into a fine heifer, and in February, 1930, two years after the test, gave birth to a heifer calf which is alive (February, 1931) and does not react to tuberculin (Fig. 2).

The result in this last case is of peculiar interest since the latter calf was reared entirely on the milk of its mother and observations have shown that following intravenous administration of virulent tubercle bacilli the organisms not infrequently rest for long periods in the mammary glands to be excreted during the lactation period.

SECOND SERIES.

This series comprised ten calves, of which eight were vaccinated with B C G by various methods and two were untreated. The resistance of the calves was tested on May 22nd, 1928, by the intravenous inoculation of 1·0 mg. of No. 18 B.V. The details of the vaccinations and results of the resistance test are summarised in Table II.

Summary.—The control calves died in 15½ days of miliary tuberculosis of the lungs, the thoracic glands showing moderate enlargement; in one calf the liver and kidneys showed indefinite grey foci.

Five of the vaccinated calves (two vaccinated intratracheally with small doses, one subcutaneously, and two by feeding in the ordinary way) died in from 19 to 33 days of tuberculosis of the lungs and thoracic glands, the abdominal organs except in calf 8 also showing early foci. These calves therefore showed only slightly higher resistance than the two untreated controls.

On the other hand, three calves, one vaccinated by intravenous inoculation, one by subcutaneous inoculation, and one by feeding by the pipette method, exhibited a much higher degree of resistance to the test bacilli. Two of these calves were killed 128 and 251 days after the test dose, because they were having fits. The autopsies showed tuberculous meningitis, but elsewhere the lesions were slight and retrogressive.

The highest degree of resistance was again manifested by a calf (No. 7) which had been vaccinated by the pipette method of giving the vaccine. Calf 7 received altogether 2·15 g. of B C G and remained well for 18 months after the test dose of virulent bacilli. The heifer then began to have trouble with the joints, which increased, and at last prevented her from getting up without assistance. She was therefore killed, having lived 648 days after the test bacilli were injected. At the autopsy the most interesting finding was in the mamma, the two hind quarters of which showed the cisterns, ducts, and canals distended with thick creamy pus which microscopically showed very numerous tubercle bacilli. Culturally, the bacilli were of the bovine type. There were a few small chronic nodules in the thoracic glands and widespread but not advanced serous tuberculosis which was, we think, the result of extension of the infection from the mamma and supramammary lymphatic glands, since the peritoneum was more extensively affected than the pleura. The right knee and hock were greatly

TABLE II.—*Second Series.*

No. of calf.	Method of vaccination.	Dose of B C G.	Duration of life after resistance test.	Result.
7	Ingestion by pipette.	2·0 g. in 8 doses. Feb. 3rd to 28th, 1928.	K. 648 days.	Serous tuberculosis, not advanced. Four small nodules in thoracic glands. T. of mamma and one supramammary lymphatic gland and some joints.
13	Ingestion in food.	2·150 g. in 11 doses. Mar. 17th to Apl. 30th.	D. 26·5 „	Acute tuberculosis.
14			D. 24·5 „	„ „
15	Intratracheal.	10·0 mg. Mar. 31st. 50·0 mg. Apl. 26th.	D. 28 „	„ „
16	„	50·0 mg. Apl. 2nd.	D. 19 „	„ „
8	Subcutaneous.	50·0 mg. Feb. 7th. 250·0 mg. Mar. 13th.	D. 33 „	Lungs partly hepatised (red) and partly pinkish-grey; definite tubercles sparse. Thoracic glands irregular, yellow foci in places aggregated.
9	„	100·0 mg. Feb. 7th. 200·0 mg. Mar. 14th.	K. 128 „	T. of meninges. Disease elsewhere not severe.
10	Intravenous.	10·0 mg. Feb. 11th. 20·0 mg. Mar. 16th.	K. 251 „	T. of meninges. Disease elsewhere slight and retrogressive.
17	Control.	—	D. 15·5 „	Acute T. of thoracic organs.
18				

enlarged, distended with synovial fluid, and showed large erosions of the cartilages. A culture from the synovial fluid of the left hock grew one colony of bovine tubercle bacilli.

THIRD SERIES.

In the first two series of experiments two calves which had been fed with B C G by the pipette method —total dose in one instance 1·0 g. and in the other 2·1 g.—exhibited a high degree of resistance to the intravenous inoculation of 1·0 mg. of virulent bovine tubercle bacilli, which killed untreated calves in less than 17 days. On the other hand, two calves fed with B C G in the ordinary way, that is, by giving the vaccine mixed with the milk, the total doses exceeding 2·0 g., showed only a very slightly increased resistance. of acute tuberculosis of the lungs and thoracic glands rather sooner than the controls. The fourth calf, No. 26, which received the smallest dose of B C G, resisted the intravenous inoculation of 1·0 mg. of bovine tubercle bacilli.

This calf, after remaining in good health for more than a year, began to show signs of weakness in the hind quarters. As he did not improve he was killed 490 days after the resistance test. The autopsy showed chronic nodular tuberculosis of the lungs and thoracic glands and tuberculosis of the serous surfaces rather more extensive on the peritoneum and pericardium than on the pleura. No tubercles were seen on the brain or cord; the membrane over the pons was somewhat gelatinous, and there seemed to be a slight excess of cerebro-spinal fluid.

The two calves fed with the avian strain also died more quickly than the controls.

TABLE III.—*Third Series.*

No. of calf.	Method of vaccination.	Dose.	Periods of vaccination.	Duration of life in days.	Result.
21	Ingestion by pipette.	2·050 g. B C G 10 doses.	July 30th to Aug. 20th, 1928.	D. 22	Lungs extensively consolidated and beset with miliary tubercles. Thoracic glands extensively tuberculous.
23	"	1·500 g. B C G 10 doses.	Aug. 1st to 20th, 1928.	D. 22	
25	"	1·000 g. B C G 10 doses.	Aug. 8th to 29th.	D. 26	
26	"	0·500 g. B C G 10 doses.	Aug. 8th to 29th.	K. 490	Nodular tuberculosis lungs and thoracic glands. T. of serous surfaces.
22	"	0·500 g. atten. hum. 10 doses.	Aug. 3rd to 27th.	D. 8	Red hepatisation of lungs, no tubercles. Thoracic glands enlarged.
24	"			D. 35	Consolidation and miliary tuberculosis of lungs. Thoracic glands enlarged and caseating.
27	"	0·500 g. atten. avian. 10 doses.	Aug. 8th to 31st.	D. 17	Lungs extensively hepatised and closely beset miliary tubercles. Thoracic glands tuberculous.
28	"			D. 21	As Calf 27, with early T. of a portal gland.
29	Intravenous.	5·0 mg. B C G 10·0 mg. " 50·0 mg. "	Aug. 23rd. Aug. 30th. Sept. 13th.	D. 22	Lungs extensively hepatised and closely beset miliary tubercles. Thoracic glands enlarged and caseating, less advanced than in 28.
30	"	10·0 mg. " 50·0 mg. "	Aug. 23rd. Sept. 13th.	D. 73	Extensive lobular caseating pneumonia. Thoracic glands large and caseating. No macroscopic lesions elsewhere.
D.	"	10·0 mg. " 100·0 mg. "	Aug. 7th. Aug. 30th.	D. 636	Death during parturition. Thoracic glands, few calcareous foci. Some foci in kidneys and one nodule on cord.
19	Control.	—	—	D. 27	Lungs extensively emphysematous, consolidated and closely beset miliary tubercles. Thoracic glands much enlarged and extensively caseated. Early T. of kidneys and portal glands.
20	"	—	—	D. 26	Lungs and thoracic glands as in Calf 19. Nothing definite elsewhere.

We thought that the higher degree of resistance of the pipette fed calves might be the consequence of greater absorption of the B C G by the pipette method than after ingestion with the food, as a result of the bacilli remaining a longer time in contact with the mucous membrane of the mouth and pharynx, and perhaps also of insufflation of some of the bacilli into the lungs. We decided to test the pipette method of giving the vaccine on a larger number of animals, and in this third immunity experiment we fed four calves with doses of B C G ranging from 0·5 to 2·0 g. At the same time and in the same manner we fed two calves with an attenuated avian strain and two calves with an attenuated human strain. In addition, three calves were vaccinated by intravenous injection. The vaccinated calves together with two untreated calves were tested on Nov. 8th, 1928, each receiving intravenously 1·0 mg. No. 18 B.V.

Summary.—It will be seen from Table III. that three of the calves vaccinated by feeding with B C G died

One of the two calves fed with the attenuated human strain died in eight days of acute pneumonia (cf. reactor Series 1); the other lived 35 days, that is, eight days longer than the longest lived control, and showed miliary tuberculosis of the lungs and tuberculosis of the thoracic glands without visible lesions elsewhere.

Of the intravenously immunised calves, one died in 22 days of acute tuberculosis similar to that in the controls, another died 73 days after the resistance test inoculation, and showed extensive lobular caseating pneumonia and enlarged caseating thoracic glands; there were no tuberculous lesions elsewhere.

The third intravenously immunised calf resisted the inoculation of the test bacilli and developed into a fine heifer. She was sent to the bull and became pregnant. Two or three months before she was due to calve she began to manifest slight weakness of the hind quarters; this gradually increased, and at last prevented her from getting on her feet. As her time was nearly up she was kept in the hope of securing a living calf, but she died as a result of hypostatic congestion of the lungs, labour having just begun. The autopsy showed a small nodule on the ventral surface of the lumbar cord which was the cause of the paresis of the hind quarters; besides this there were a few chronic lesions in thoracic glands and kidneys and on

TABLE IV.—*Fourth Series.*

No. of calf.	Method of vaccination.	Dose of BCG.	Dates of vaccination.	Duration of life in days.	Result.
31	Ingestion in food.	2·042 g. 16 doses.	Oct. 31st to Jan. 30th, 1929.	K. 273	Scattered tubercles in thoracic glands and early tuberculous meningitis.
32	"	"	"	K. 213	Slight chronic G.T. and tuberculous meningitis.
33	Intratracheal.	0·775 g. 5 doses.	Oct. 31st to Jan. 5th, 1929.	D. 97	Extensive chronic tuberculosis of lungs and thoracic glands.
35	"	0·925 g. 5 doses.	Oct. 31st to Jan. 9th, 1929.	Alive.	—
39	Intravenous.	12·0 mg. 100·0 mg.	Dec. 10th, 1928. Jan. 7th, 1929.	K. 316	Three tuberculomata in spinal cord. Caseation of an iliac gland on each side. Otherwise normal.
40	"	"	"	K. 570	Chronic disseminated tuberculosis not severe. Nodules on cord and in brain and slight meningitis.
42	"	"	"	D. 35½	Severe T. lungs and thoracic glands.
36	Ingestion in food.	Equine strain. 50·0 mg. 50·0 mg. 70·0 mg.	Nov. 6th, 1928. Dec. 6th, 1928. Jan. 8th, 1929.	K. 381	No sign of tuberculosis. Guinea-pigs inoculated with mediastinal, retropharyngeal, and mesenteric gland emulsions remained healthy (141 days).
47	Control.	—	Mar. 11th, 1929.	D. 21½	Acute severe tuberculosis of lungs and thoracic glands; minute foci in other organs.
48	"	—	"	D. 18½	Acute severe tuberculosis of lungs and thoracic glands; grey foci in liver.

the visceral pleura. The calf in utero was full-term and on autopsy was perfectly normal.

FOURTH SERIES.

In this series there were ten calves. Seven were vaccinated with BCG (two by ingestion, two intratracheally, and three intravenously); one was vaccinated by feeding with an attenuated equine strain and two were controls. They were tested as to their resistance to tuberculosis on March 11th, 1929, by the intravenous injection of culture of No. 18 B.V. Six vaccinated and the two control calves received each 0·25 mg. of the test bacilli; the remaining two (BCG intrav.) vaccinated calves received 0·5 mg. and 1·0 mg. respectively.

Summary.—The two control calves died of acute tuberculosis in 18½ and 21½ days. (Table IV.)

Of the three intravenously vaccinated calves one which received the same test dose as the controls died in 33½ days of miliary tuberculosis of the lungs with consolidation and tuberculosis of the thoracic glands. One which received double the test dose, after remaining perfectly well for nine months, developed paresis of the hind limbs, and on that account was killed 316 days after the test injection. At the autopsy a tuberculoma 2·5 by 2 cm. was found lying between the dura mater and the dorsal cord. In the spinal canal outside the dura 3 cm. anterior to the tuberculoma there was a hempseed-sized tuberculous nodule lying on the nerves at their point of issue. In a similar situation level with the fifth cervical vertebra there was a pea-sized caseo-purulent nodule in which tubercle bacilli were not found. One iliac gland on each side was enlarged to the size of a French plum and was tensely filled with caseo-pus (cultures of bovine type obtained). There was no sign of tuberculosis elsewhere. Emulsions of the bronchial, portal, mesenteric, and retropharyngeal glands and washings from the mammary sinuses did not produce tuberculosis in guinea-pigs. The third intravenously vaccinated calf, which received four times the amount given to the control calves, was killed 570 days after the test dose

TABLE V.—*Fifth Series.*

No. of calf.	Method of vaccination.	Dose of BCG.	Dates.	Duration of life after resistance test.	Result.
54	Intravenous.	10·0 mg. 100·0 mg.	Aug. 21st. Sept. 11th, 1929.	D. 47 days.	General tuberculosis, severe in lungs and thoracic glands.
56	"	"	"	Alive Feb., 1931.	—
57	"	"	"	D. 317 days.	Three nodules in a kidney and tuberculous meningitis.
59	"	"	"	K. 257 "	Slight tuberculosis of kidneys. Severe tuberculous meningitis.
55	"	10·0 mg. 50·0 mg.	Aug. 21st. Sept. 17th.	K. 215 "	Some chronic foci in thoracic and mesenteric glands. Tuberculous meningitis.
60	"	"	"	K. 92 "	Chronic, not severe, pulmonary tuberculosis. Slight tuberculosis of thoracic glands and a kidney.
62	"	"	"	D. 47 "	Miliary tuberculosis of lungs and hyperplasia of thoracic glands.
51	Control.	—	Nov. 27th.	D. 27 days.	General tuberculosis severe in lungs and thoracic glands.
52	"	—	"	D. 33 "	G.T. similar to that in Calf 51.
50	"	—	"	D. 39 "	As in Calf 52, but lesions a little larger and more caseous.
49	"	—	"	D. 60 "	Extensive lobular caseating pneumonia. Thoracic glands moderately enlarged, cortices caseous and gritty. Elsewhere scattered tubercles.

because of paresis of the hind quarters. The autopsy showed very slight hypertrophy of the lymphatic fringes on the pleura and peritoneum, and a number of loosely pedunculated firm caseo-calcareous nodules up to a broad bean in size on the pericardium; in the lungs there were about 18 nodules, 0·5 to 2 cm. in diameter, with fibrous walls and softened gritty contents; the thoracic glands were largely replaced by cheesy caseous substance; the kidneys were tuberculous and also the left eye; there were three nodules outside the cord, one on the pia mater of the fluid, and there was gelatinous substance in the medulla; no tubercles were, however, detected; the spinal fluid produced tuberculosis in a guinea-pig.

The calf vaccinated by feeding with an attenuated equine strain was killed 381 days after the test and was found to be free from tuberculous lesions and living tubercle bacilli. The immunity conferred on this calf was therefore absolute.

TABLE VI.—*Sixth Series.*

No. of calf.	Method of vaccination.	Dose of B C G.	Duration of life after resistance test in days.	Result.
63	Intravenous.	10·0 and 100·0 mg., interval 3 weeks.	Alive Feb., 1931.	—
64	"	"	K. 315	Pleural (left side) and peritoneal tuberculosis. Scattered tubercles in spleen. Moderately severe T. of kidneys. Severe and extensive tuberculous meningitis. A few glands showed chronic tuberculosis.
65	"	"	Alive Feb., 1931.	—
66	"	"		
70	"	"	K. 174	Serous tuberculosis, not advanced. Discrete tubercle in thoracic glands. Tuberculous meningitis.
71	"	"	Alive Feb., 1931.	—
72	"	"	K. 262	Widespread T. of peritoneum not advanced. "Perlsucht" of pericardium. Slight T. of kidneys. Tuberculous meningitis.
73	"	"	K. 245	Generalised nodular tuberculosis, not severe. Tuberculosis of bones of skull and a vertebra. One nodule on crus cerebri.
74	"	"	K. 45 (ill).	Extensive consolidation and miliary tuberculosis of lungs. Thoracic glands moderately enlarged, fibroid showed a few yellow foci. Kidneys, slight medullary tuberculosis. Pharyngeal gland, a caseous tubercle.
75	"	"	D. 69	Advanced lobular caseating tuberculous pneumonia; extensive T. of thoracic glands and slight G.T.
78	"	"	K. 63 (dying).	Extensive lobular caseating pneumonia, chiefly of caudal lobes; thoracic glands hyperplasic, few areas of caseation.
79	"	"	K. 132 (ill).	Disseminated tuberculosis severe only in thoracic glands and meninges.
76	"	10·0 and 75·0 mg.	Alive Feb., 1931.	—
77	"	"	K. 241	Tuberculous meningitis and slight retrogressive G.T.
82	"	"	D. 60	Tuberculous pneumonia; thoracic glands enlarged and caseating; two tubercles in kidneys.
83	"	"	K. 38 (dying).	Severe miliary T. of lungs; thoracic glands enlarged, showed relatively slight caseation.
80	"	10·0 and 50·0 mg.	D. 35½	Severe miliary T. lungs; pleural effusion; thoracic glands hyperplasic, relatively slight caseonecrosis.
81	"	"	K. 237	Tuberculous meningitis and slight retrogressive G.T.
84	"	"	D. 64	Tuberculous pneumonia; thoracic glands hyperplasic; three nodules in kidneys.
67	Control.	—	D. 18½	Almost complete consolidation and profuse miliary tuberculosis of lungs; thoracic glands enlarged and caseating; liver showed moderate number, kidneys, a few grey tubercles.
68	"	—	K. 25 (dying).	Lungs extensively hepatised and closely beset with miliary tubercles; thoracic glands enlarged and extensively caseated. Spleen and kidneys scattered tubercles; liver and portal glands, moderate number. All other lymphatic glands contained miliary tubercles.
69	"	—	K. 24 (dying).	G.T. similar to that in Calf 68.

cord, and a number of chronic caseous tubercles on the meninges of the base of the brain.

Of the two intratracheally vaccinated calves one died in 97 days of thoracic tuberculosis, the lungs being extensively replaced by tuberculomatous masses. The other is alive and a well-grown heifer, but has a tuberculous left fore quarter of the udder. On Oct. 31st, 1930, she gave birth to a heifer calf which has been vaccinated and is sucking.

Of the two calves vaccinated by ingestion of B C G with the food, one was killed 213 days after the test because of meningitis, and was found on autopsy to have chronic general tuberculosis, interesting features being complete obliteration of the pericardial sac with a thick layer of tuberculous tissue and large nodules in the heart muscle. The second calf had a fit and was killed 273 days after the test dose. The thoracic glands contained scattered calcareo-caseous tubercles but other organs and glands were perfectly normal, there was some excess of cerebro-spinal

FIFTH SERIES.

In July, 1929, a batch of ten calves was obtained. They were tested with tuberculin by the double intradermal test and none reacted.

First vaccination.—On August 21st, 1929, the ten calves were intravenously injected each with 10·0 mg. B C G. (Table V.)

One of the calves (No. 61) died 19 days later of spontaneous tuberculosis, the right lung and the thoracic glands showing extensive tuberculosis and the glands on the right side more advanced caseation than those on the left. The left submaxillary gland showed grey areas in the cortex in an early stage of caseation. Dysgonic cultures were obtained from a thoracic gland. A few colonies of B C G also appeared. The temperature of this calf rose to 104·8° F. at the fifteenth hour after the vaccination and was high

(maximum 105·4°) for three days; afterwards it was intermittent. Another calf (No. 53) fell away in condition, developed diarrhœa, and died 27 days after the injection; the autopsy showed no tuberculous lesions; B C G was recovered in pure culture from the bronchial and portal glands.

Second vaccination.—On Sept. 11th, three weeks after the first dose, four calves were injected intravenously each with 100 mg. B C G. On the 17th the four remaining calves were injected intravenously each with 50 mg. B C G. One of the latter (No. 58) died four days later of pneumonia; there was no sign of tuberculosis.

Resistance test.—On Nov. 27th, 1929, the seven surviving vaccinated calves and two untreated calves were inoculated intravenously each with 0·25 mg. of culture of bovine bacilli (Nos. 20 and 25 B.V. mixed). Two additional untreated calves received 0·1 mg. and 0·05 mg. of the same cultures.

Summary.—The two control calves which received 0·25 mg. of the test dose died in 27 and 33 days of general miliary tuberculosis, very severe in the lungs and thoracic glands. The two calves inoculated with 0·1 and 0·05 mg. died in 39 and 60 days of general tuberculosis severe in the lungs.

Of the vaccinated calves two died in 47 days of severe miliary tuberculosis of the lungs; in one the thoracic glands were also caseous, and there were scattered tubercles in other organs and glands; in the other the thoracic glands were hyperplasic, and there was no disease elsewhere. One calf was killed 92 days after the test because of generalised ringworm. The lungs were found to be moderately well filled with fibro-calcareo-caseous nodules and masses, some of which replaced whole lobules. The thoracic glands were slightly enlarged and indurated, and contained scattered caseous foci; the kidneys contained two tubercles. The other calves were killed 215 and 257 days after the test dose because of fits, and showed on autopsy well-marked tuberculous meningitis and slight chronic general tuberculosis.

One calf was killed 317 days after the test because of cerebral symptoms ending in coma. The autopsy showed extensive tuberculous meningitis, but no disease anywhere else except in the kidneys, which contained three small nodules.

The remaining calf is alive and in good condition one year three months after the test.

SIXTH SERIES.

This series comprised 22 calves. They were tested with tuberculin on Nov. 20th, 1929, and none reacted. Of the 22 calves, 19 were vaccinated in November and December by the double intravenous method. The first dose of B C G was the same for each calf—namely, 10·0 mg.; the second dose for 12 calves was 100·0 mg., the interval between the doses being 21 days in 10, and 24 days in two instances; the second dose for four calves was 75·0 mg. and for three calves it was 50·0 mg. 24 days after the first dose. The purpose of this series was to test on a larger scale than heretofore the double intravenous method of vaccination. The resistance of the 19 vaccinated and three untreated calves was tested on Feb. 25th, 1930, 92 days after the first vaccination, by the intravenous inoculation of 0·25 mg. Nos. 20 and 25 B. V. mixed.

Summary.—The three control calves died in 19, 24, and 25 days of general miliary tuberculosis, most severe in the lungs, which were hepatised. (Table VI.)

Of the vaccinated calves two died in 36 and 38 days of miliary tuberculosis of the lungs with tuberculosis of the thoracic glands, no tubercles being visible in the abdominal organs and other lymphatic glands.

One calf killed when ill 45 days after the test showed extensive tuberculous consolidation of the lungs and tuberculosis of the kidneys. Four calves died in 60, 63, 64, and 69 days of caseating tuberculous pneumonia; in addition there was slight generalised tuberculosis in two calves, three nodules in the kidneys of one calf, and no disease elsewhere in the fourth. Two calves were killed 132 and 174 days after the test because of fits, and were found to have well-marked tuberculous meningitis and chronic general tuberculosis of no great severity. Three calves were killed 237, 241, and 262 days after the test because of fits. The autopsies showed severe tuberculosis of the meninges and slight disseminated tuberculosis. One calf (No. 73) which had developed an internal squint was killed 245 days after the test. The autopsy showed tuberculosis of the bones of the skull—the frontal sinuses being filled with caseo-pus—and general nodular tuberculosis not severe. One calf was killed 315 days after the test because of cerebral symptoms. At the autopsy very severe tuberculous meningitis was found. A few glands were affected. The kidneys showed moderately severe medullary tuberculosis, and the spleen and left pleura sparsely scattered tubercles. There was moderately widespread tuberculosis of the peritoneum. Five calves are alive.

Summary of Experiments.

Fifty-one calves were vaccinated with B C G by various methods—10 by feeding, 4 intratracheally, 3 subcutaneously, and 34 intravenously—and were subsequently tested as to their resistance to tuberculosis, together with 14 untreated calves, by the intravenous injection of fully virulent bovine tubercle bacilli in doses ranging from 1·0 mg. to 0·25 mg. of culture. All the 65 calves had been previously tested with tuberculin by the double intradermal test and had not reacted.

CONTROLS.

Five control calves received each 1·0 mg. of bovine tubercle bacilli and died in from 15½ to 27 days (average 20 days) of acute miliary tuberculosis. Seven calves received each 0·25 mg. and died in from 18½ to 27 days (average 24 days) of general miliary tuberculosis. Two calves were inoculated with smaller doses—namely, 0·1 mg. and 0·05 mg. respectively—and died of severe general tuberculosis in 39 and 60 days. Vaccinated calves were not given doses of less than 0·25 mg. It may be said, therefore, that they received at least from 5 to 20 times the dose necessary to cause fatal general tuberculosis in normal calves.

EFFECT OF VACCINATION.

Feeding.—The vaccine was administered to six calves by pipette into the mouth in doses ranging from 0·5 to 2·1 g. Three of the calves showed no higher resistance than the controls, while the other three showed much higher resistance, amounting in one instance apparently to complete immunity. This animal subsequently had a calf (now 12 months old) which was reared entirely on its mother. It does not react to tuberculin and may therefore be presumed to be free from tuberculosis. Four calves were fed with B C G in the milk. The resistance of two of these calves was a little higher than that of the controls while that of the remaining two was much higher.

Subcutaneous inoculation.—Three calves were vaccinated in this way. One showed little, if any, increased resistance, and one showed slightly increased resistance. The remaining one exhibited a moderately high degree of resistance.

Intratracheal injection.—Four calves received directly into the trachea doses of B C G ranging from 50 to 925 mg. One of the calves which had received a single dose of 50 mg. was tested 50 days after vaccination and died 19 days later (controls 15·5 days). A second calf was vaccinated twice, the total amount of B C G being 60 mg. and died of tuberculosis 28 days after the test. A third calf which had received 775 mg. of B C G in five doses given during a period of 2½ months died 97 days after the test inoculation of tuberculosis limited to the thoracic organs. The remaining calf which also received five doses of B C G, the total amount, however, being 925 mg., exhibited

a high degree of resistance. The animal—a heifer—is alive nearly two years after the test and has a calf.

Intravenous inoculation.—Thirty-four calves were vaccinated intravenously and all except one showed increased resistance, but there were great individual variations in the degree of resistance. One calf which had been given a single small dose of B C G exhibited only slightly increased resistance. Thirty-two calves were vaccinated twice, the first dose of 10·0 mg. being followed 21 to 24 days later by 20·0 mg. in one instance, 50·0 mg. in seven instances, 75·0 mg. in four instances, and 100·0 mg. in 20 instances. Eleven of the 32 calves died or were killed when dying in from 33½ to 73 days (average 52·3 days) of tuberculosis, severe in the lungs and thoracic glands, and slight or not apparent elsewhere.

One calf was killed on account of ringworm 92 days after the test and showed chronic general tuberculosis not severe. Ten calves were killed because of meningitis 132 to 317 days (average 240 days) after the resistance test; besides tuberculosis of the meninges there were disseminated lesions in other parts of the body, for the most part slight and not progressive.

One calf was killed 245 days after the test because of cerebral symptoms and showed tuberculosis of the bones of the skull and a vertebra and general nodular tuberculosis, not severe. One calf was killed 316 days after the test because of paralysis of the hind limbs; the autopsy showed three tuberculomata in the cord with secondary involvement of the iliac glands and no sign of tuberculosis elsewhere. Two calves lived 570 and 636 days after the test; one showed on post-mortem examination slight retrogressive tuberculosis, the other moderate general tuberculosis. Five calves are still alive.

One calf was vaccinated three times, receiving 5, 10, and 50 mg., the intervals between the doses being 7 and 14 days. Tested eight weeks later the calf was less resistant than the controls. This is the only instance of no increased resistance after intravenous vaccination.

With regard to the degree of protection afforded by different doses of B C G intravenously, it is interesting to note that only 50 per cent. of each group of calves vaccinated with 10 and 50 mg. and 10 and 75 mg. respectively showed a high degree of resistance to the test bacilli, whereas 75 per cent. of the 20 calves vaccinated with 10 and 100 mg. of B C G were highly resistant.

The actual cause determining the death of the great majority of the resistant animals was tuberculosis of the central nervous system; this was due to the fact that the test dose, consisting of a large number of highly virulent tubercle bacilli, was injected intravenously, a few of the test organisms thus gaining access to the central nervous system where they were able to produce lesions owing to the low degree of resistance common in this situation. The tuberculosis elsewhere was not severe.

These results are much more encouraging than may appear at first sight. It must be remembered that although the test doses employed throughout the experiments were exceedingly severe the life of 23 of the 51 vaccinated animals was prolonged for periods ranging from eight months to three years, and the great majority of the remainder showed definitely increased resistance. There is little doubt that a less severe test dose administered so as to resemble more closely a natural infection would have given more spectacular results. It is proposed to adopt the former course in future experiments, since we are now satisfied that a high degree of immunity can be induced in calves when B C G vaccine is used in the most appropriate manner.

Conclusions.

(1) The strain of B C G used throughout these experiments would appear to be avirulent for the calf and incapable of giving rise to progressive tuberculosis, even when inoculated intravenously in large doses. (2) Whether given by the mouth or intratracheally, or by subcutaneous or intravenous injection B C G can raise the resistance of a calf to a virulent experimental infection. (3) An increase of resistance is less certain after feeding with B C G than after intravenous injection, though feeding with the vaccine may in some instances induce as high a resistance as injection into the tissues. (4) Intravenous injection, in our experience, has proved the most satisfactory method of vaccination with B C G. (5) The degree of increased resistance conferred upon calves by intravenous vaccination varies within wide limits, and appears in general to be directly proportionate to the dose of B C G vaccine.

DURATION OF INCREASED RESISTANCE.

Our experiments were, in the first instance, concerned with questions of the best method of administration and dose of B C G. The tests of resistance were made therefore after an interval when one might suppose that the resistance was at its highest level, that is from two and a half to three months from the beginning of vaccination. In future work we propose (*a*) to ascertain the duration of the increased resistance produced by intravenous vaccination; (*b*) to test the resistance of intravenously vaccinated calves against a natural mode of infection; (*c*) to compare the resistance produced by other antigens.

The cost of these investigations was borne by the Institute of Animal Pathology, and special grants from the Medical Research Council and Development Commission for the purchase and maintenance of experimental animals, and from the Empire Marketing Board for additional accommodation without which it would have been impossible to carry out the work.

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HOSPITAL SAVING ASSOCIATION REPORT.—In its report for the year ended July 31st, 1930, the Hospital Saving Association states that the number of contributors has increased to 810,144, and the amount of contributions to £438,354. Those treated during the 12 months number 238,929, and the revenue account for the year shows a credit balance of £22,233. The executive council recommend that a final distribution of £22,000 be made to coöperating hospitals, which will bring the total payment for hospital services to £325,781.

DISSECTING ANEURYSM OF THE AORTA.

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The clinical features of a dissecting aneurysm of the aorta, when the lesion is not immediately fatal, are not often of such a character that the diagnosis can be made. In the case here reported the signs and symptoms were so grouped together that the nature of the lesion might quite well have been suspected. The patient was suddenly struck down with acute pain between the shoulder-blades and rapidly became unconscious, with the features of acute circulatory failure, as from a coronary thrombosis or a ruptured aneurysm. He then recovered consciousness for a little while and complained of "pins and needles" in the legs; there were, however, no physical signs to suggest that a ruptured aneurysm was compressing the spinal cord. The pulse-rate remained persistently slow, about 56, throughout the seven hours during which he survived; this was tentatively ascribed to heart-block, but it was assumed that the block had existed before the final catastrophe and was not related to it.

Necropsy provided a single explanation of all the features. The sudden pain in the back and circulatory collapse were produced by a dissecting aneurysm at the upper end of the thoracic aorta, from which blood had extravasated along the aorta as far as the heart wall, causing heart-block, and down in the other direction at least as far as the beginning of the external iliac arteries, probably causing the peculiar sensations in the legs.

A Case Described.

The patient, who was a taxi-cab owner aged 61, had been treated by Dr. F. Curtis, of Redhill, for three years for noises in the head and dizziness, his blood pressure being 200 mm. Hg when he first came under observation in 1927. A year later the systolic blood pressure was about 160–170 mm. Hg, and the diastolic 140 mm. Hg; there was enlargement of the heart and a ringing aortic second sound. The urine was normal throughout, and at no time was there found any abnormality in the rate or rhythm of the pulse. Diminution of work and of his general activities was advised, and blood-letting was performed five or six times in the last two years. The improvement in his symptoms and blood pressure following this treatment was such that he was able to resume some of his former exertion. The end came suddenly and unexpectedly.

One day in May, 1930, having been in London, he had begun to drive his car homewards when suddenly severe pain seized him in the back, causing his to exclaim "Oh! I'm done!" The pain was about the level of the angles of the scapulæ. He was instantly brought to hospital in a car, but was unconscious on arrival at 6.55 P.M., about 20 minutes after the onset of the illness. He then presented the following features. He was a big-made, stout man who looked very ill, his face and hands being of a purplish, cyanotic colour. He was unconscious and could not be roused; but he moved all his limbs as well as the face and eyelids on each side. The skin was cold and bathed in sweat. The temperature was below 96° F. in the axilla and no pulse could be felt at the wrists. Emphysema obscured the cardiac area and the heart sounds were not definitely heard.

At 7 P.M. he was given oxygen by means of a tube and funnel, but this did not influence the cyanosis. The foot of the bed was raised, hot-water bottles were provided, and 5 minims of Curschmann's solution were injected subcutaneously. Brandy was given, but was rejected from the mouth. At 7.15 P.M. the radial pulse was just palpable at 56 per minute. 0·5 c.cm. of pituitrin was given subcutaneously. The pulse-rate rose to 60 at 7.30 P.M. but fell to 56 again. At 8 P.M. he was conscious and, though drowsy, was able to answer questions. His memory was good for events up to the time when he "felt faint in the car," after which he could recollect nothing. He complained of "pins and needles" in the legs, and wanted to lie on his left side. There was also slight epigastric pain. He could move all his limbs, and there was no gross loss of sensation in the legs, while the plantar reflexes were both flexor. There was cyanosis still, and the skin remained cold and moist. The pulse was of small volume at the left wrist (rate 56) and could not be felt at the right. The dorsalis pedis artery was pulsating in each foot. The systolic blood pressure was between 80 and 90 mm. of mercury. At 8.30 P.M. (the pulse-rate being still 56) calomel gr. 1 and brandy dr. 2 were given. At 9 P.M. the pulse-rate rose to 60 and he vomited an ounce of fluid. At 10 P.M. he was restless and trying to get out of bed to empty his bladder, but he did not pass urine when a receptacle was provided. He kept throwing off the bedclothes. There was some cyanosis, the pulse-rate was 56, and respiration-rate 20; from this time onwards the pulse-rate, counted every quarter of an hour, was 62, only once reaching 64; the pulse was small in volume and regular. At 10.30 P.M. calomel gr. 1 and pot. brom. grs. 40 were given, but he vomited. At 11.30 P.M. he was still restless, but the restlessness alternated with periods of inactivity, these synchronising with the hypopnœic phases of Cheyne-Stokes' respiration which had now developed. At midnight the pulse was 62 and the respiration-rate still 20. At 1.30 A.M. cyanosis increased. Oxygen and 5 minims of Curschmann's solution were given, but he died in coma at 1.45 A.M.

Necropsy.—There was much post-mortem degeneration owing to delay in obtaining the coroner's order. The body (14 st. 2 lb. and 6 ft. 2 in.) was very fat. The heart was enlarged, but it was not weighed separately from the aorta. There was a "milk-spot" on the posterior aspect of the base of the right ventricle, but the pericardium was otherwise normal, and there was a moderate amount of subpericardial fat. The ventricles were hypertrophied, the myocardium of the left being 2·2 cm. and of the right 0·6 cm. in thickness. There were yellow streaks suggesting fatty degeneration in some of the musculi pectinati in the ventricles. The valves were healthy save for a few minute fibrous tags on the convex surfaces of the aortic cusps. There were a very few small patches of atheroma in the aortic arch. A number of patches were present in the sinuses of Valsalva, but the plaques became larger and more numerous in the thoracic and abdominal aorta, with slight ulceration and pouching in the last. There was no sign of syphilis.

Nine centimetres below the origin of the left subclavian artery was a transverse rent in the intima of the right side of the aorta. The tear was 1·8 cm. in length, slightly convex downwards, and running obliquely through the wall, so that the lower margin was somewhat overhung by the upper, which contained a yellow atheromatous plaque. From this rent the blood had escaped outside the intima both downwards and upwards; there was a space containing post-mortem clot in the outermost part of the media all round the vessel, except at the back of the line of origin of the thoracic and lumbar arteries,[1] at the attachment of the cœliac, renal, and mesenteric vessels, and at the origins of the branches of the aortic arch. The extravasation extended downwards as far as the bifurcation of the common iliac arteries on each side—that is, at least as far as the post-mortem examination extended. In the other direction it reached the heart by entering the tissue between the aorta and right auricle and the interauricular septum. A bulge was formed in the septal wall of the right auricle, extending from a line 2 cm. to the left of the crista terminalis to the attachment of the septal cusp of the tricuspid valve and into the pars membranacea septi; and from the junction of the auricular appendix with the auricle to the valve of the coronary sinus. There were two small patches of antemortem clot on the endocardium covering this projecting hæmatoma. Nothing abnormal was visible in the wall of the left auricle. The coronary arteries were large and their walls very atheromatous and calcified.

Apart from a fatty liver and œdema of the lungs, the rest of the body and the brain were normal.

Microscopic examination.—A section taken from the ascending part of the arch of the *aorta* showed the media divided in its outermost part, there being fibrin and blood-clot in the split, with a scanty cellular reaction in some adjacent parts of the media. Sections of the *heart* were examined from the region between the mouth of the coronary sinus and the membranous part of the septum. All showed extensive hæmorrhage with destruction of muscle-fibres, many of those remaining exhibiting hyaline change. No fibres of the conducting bundle could be identified.

Clinical Features.

Though the post-mortem findings in this case did appear to explain all the clinical phenomena, it is necessary to attempt their critical comparison with the features observed in other published cases of dissecting aneurysm in order to see whether the

clinical symptoms could fairly be related to the lesions actually found.

PAIN IN THE BACK.

Sudden and intense interscapular pain is uncommon in dissecting aneurysm in the descending thoracic aorta. Was the pain therefore of definite localising value in this instance where the two uncommon features were combined? Pain in some part of the back is mentioned as a symptom in 19 out of the 121 published accounts of cases of dissecting aneurysms to which I have had access. Naturally, because death was often sudden, most of the published cases lack a detailed account of clinical symptoms. The list analysed is, moreover, incomplete because I did not deal with cases published in German. Even in 1921 Crowell[20] was able to compile a total list of 273 published cases, and it may incidentally be observed that in his group dissection of the descending thoracic aorta occurred in only 35·5 per cent. The following excerpts briefly indicate the character of the pain in the back in the 19 published cases referred to above.

Swaine[2] gives a detailed and vigorous description of the illness of a patient whose dissecting aneurysm arose "a few lines below the place where the left subclavian is given off," and extended at least as far as the common iliac arteries. The attack began with tearing pain in the chest, followed by pain darting from mid-sternum down the left of the spinal column to a point near the umbilicus. Later there was a repetition of "lancinating pain referred . . . to the posterior part of the thorax from scapula to scapula."

A patient, admitted to hospital[3] for lumbar pain and albuminuria and in whom pain became severe as if constricting the lower part of the chest, later complained of slight pain in the scapular region. Autopsy, after sudden death, revealed a rent in the inner coats near the origin of the aorta and dissection in the aortic wall for 30 cm., with terminal rupture into the pericardium.

A man[4] who had had pain in the back, diagnosed as "a sprain" or "lumbago," four days later suffered from pain in the chest and between the shoulders, and died of intrapericardial rupture of dissecting aneurysm. The lining of the aorta was torn in two places just above the aortic valves.

A rent in the inner coats, 2½ in. below the origin of the left subclavian,[5] with dissection up to this vessel and down to the renal arteries, was associated with a "severe sprain of the muscles of the back," sustained while lifting a bucket of water seven days before death. The pain subsided in a few days, but the patient died suddenly with rupture of the aneurysm in the left pleura.

A rent ½ in. below the left subclavian artery,[6] with a 4 in. dissection and escape of blood into the left pleura, gave pain between the shoulders.

Pain at the left shoulder-blade,[7] whence it had moved from the cardiac and epigastric regions, occurred in a woman who died of rupture into the pericardium of a dissecting aneurysm extending into the innominate artery from a tear half an inch above the aortic valves.

Two saccular aneurysms of the abdominal aorta with a dissecting condition extending into the thoracic portion were found by Peabody[8] in a patient who had had severe pain in the back and right side for several months. During his stay in hospital for treatment of the epigastric tumour he died suddenly, following an attack of pain "in the region of the lower lobe of the right lung posteriorly." There was also a rupture into the right pleura and a hæmorrhagic infarction of the lower lobe of the right lung.

The loins are mentioned, among other situations in which pain occurred, in three cases, reported by Peacock,[9] Dickinson,[10] and Greenhow[11] respectively. In the first dissection extended from the commencement of the descending part to the origin of the aorta and to the common iliac arteries. In Dickinson's patient there was a tear half an inch above the valves, with spread of blood in the aortic wall as far as and incompletely through the thoracic aorta. The third case presented a large dissecting aneurysm of the abdominal aorta. Pain in the loins and along the back was felt for three days by an old woman[12] who had a saccular aneurysm at the termination of the abdominal aorta with dissection thence throughout the length of the vessel. Constant lumbar pain was a feature three hours after the beginning of an attack[13] in which a dissecting aneurysm, starting in the transverse part of the aortic arch, spread to the ascending portion and to the right common iliac artery. It ruptured into the mediastinum and pleura.

Pain in the back, the site of which is not more exactly stated, was associated with a tear half an inch above the valves[14] and dissection at least as far as the left subclavian, with tears in the transverse part and at the junction of the transverse and descending parts of the arch,[15] forming two distinct aneurysms, the second of which dissected to within two inches of the aortic bifurcation. Such pain was also described with intramural extravasation of blood through three rents in the aortic arch[16]; with an appearance of "double aorta" from the sinus of Valsalva to the iliac arteries[17] found some eight years subsequently; and with a slit in the upper aspect of the arch[18] from which separation had occurred as far as the abdominal aorta. In a case of recurrent pleurisy,[19] six months after the onset of dorsal pain, two dissecting aneurysms were found. One was old and extended to the diaphragm and upwards for 2 cm. from its origin in a rent 1 decimetre below the ductus arteriosus. The other was recent, and in the region of the inferior mesenteric.

In only three cases therefore—namely (refs. [2] [3] [4]), of the above-mentioned 19 cases who exhibited pain anywhere in the back with rupture—was this pain associated with a rent somewhere between the origin of the left subclavian artery and the diaphragm. Moreover, out of the total of 121 cases analysed there are 17 others with recorded clinical symptoms where the rent either arose in the descending thoracic aorta or where extravasation of blood into that part of the aorta occurred from a rent elsewhere; in none of these was pain in the back experienced. The data are summarised in the following table:—

No pain in back.	Pain in back.	Rent in d.t. aorta.	Extravasation in d.t. aorta from rent elsewhere.
—	3	3	—
—	16	0	9
6	—	6	—
11	—	0	11

d.t. = descending thoracic.

It therefore appears that pain between the shoulder-blades is not a frequent accompaniment of rents in the wall of the descending thoracic aorta, and that its occurrence cannot be assigned high localising value.

PULSE-RATE.

The pulse-rate in the present case, as soon as the patient had recovered from the shock and circulatory collapse to such an extent that the rate could be ascertained, remained persistently slow, at about 56. No galvanometer tracing was taken and the existence of heart block could only be conjectured.

A pulse may be slow for an hour or two as the result of vagal over-action in any condition of sudden pain and fainting shock. But in this case the slow rate was maintained after the patient emerged from shock, and it is known that the rate had been normal when the patient was previously under the care of his private doctor. In view of the extension of the hæmorrhage into the region of the heart where the conducting bundles lie, it appears probable that heart-block was actually so caused. For this I could find no parallel in the recorded cases. A pulse-rate less than the normal of 72 per minute is mentioned in only four of the 121 cases.

It was irregular at 62 in a man[21] aged 50 who was found to have syphilitic aortitis and a dissecting aneurysm arising from a plaque at the mouth of the right coronary artery. The separation of the coats extended to the common iliac vessels.

A woman of 67[7] whose ascending aorta and innominate artery were dissected from a tear half an inch above the valves had a regular, full pulse at 60 per minute 1½ hours after the onset of the attack.

Thompson's case,[21] a man of 45, had numerous syncopal attacks during which no pulse could be felt but, between these, rates of 80, 15, and 100 were recorded. The aneurysm

stretched from a split half an inch above the aortic valves to the origin of the renal arteries.

In another case [12] of saccular aneurysm of the aortic termination with dissection throughout the length of the vessels, the pulse was irregular and varied in rate from 70 to 90.

Hæmorrhage into the interauricular septum is a rare condition. Maguire[22] described a swelling of the septum, filled with fibrin and blood-clot, communicating with an ulcerated area on the ventricular wall just below the aortic cusps. These latter were thickened and calcareous, and had on them "large masses of inflammatory material." No clinical history was available.

Pelvet [23] quotes a case from a publication by Dittrich [24] where a young woman who died with dropsy and pneumonia was found to have a pericardium full of blood which had issued out of a cavity the size of a pigeon's egg in the interauricular septum above the fossa ovalis. The aneurysm bulged into the left auricle and into the pericardium. There is no note of the pulse-rate

PAIN IN THE LEGS.

The sensation of "pins and needles" in the lower limbs was not an excruciating pain, but rather of the type that is associated with minor irritation or anæmia of the nerves. The extravasation of blood in the walls of the aorta and iliac arteries was not so great as to check the flow of blood within their lumen to the legs, for the dorsalis pedis arteries were pulsating fairly well. The pain was therefore not caused by inteference with blood flow, but it might have arisen in nerves from the walls of the iliac arteries into which blood was proved to have extravasated, if not lower down along the femorals, which were not fully examined at necropsy. Here the evidence cannot be regarded as more than suggestive. There is little clinical information from other sources as to the type and distribution of pain that may be felt when arterial coats are disturbed. Osler, in his admirable article on aneurysms,[25] states that in cases of dissecting aneurysm there may be "agonising pain along the course of all the arteries extending to the limbs."

Another possibility which might be advanced is an interference with the nerves of the lumbar plexus by extravasation of blood in their neighbourhood. But in this instance post-mortem examination proved that there was actually no leakage of blood outside the adventitia, and there could therefore have been no direct pressure on the main nerve trunks.

My thanks are due to Dr. Curtis, of Redhill, for details of the illness before admission to hospital, and to Dr. W. G. Barnard and Dr. Ronald Grant for help in the preparation and interpretation of the pathological specimens.

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RUPTURE OF THE UTERUS.

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IN 1927 I published in THE LANCET [1] records of three cases of rupture of the uterus through the site of the scar of a previous Cæsarean section. Since then I have operated on three further cases of rupture of a previous Cæsarean scar, and one case of rupture of an intact uterus. The details are as follows:—

Rupture at Site of Cæsarean Section.

CASE 1.—Mrs. A, aged 39, had had three normal confinements, then one Cæsarean section for central placenta prævia ten years ago, followed by a normal confinement induced prematurely by means of bougies six years ago. She was admitted to hospital on the suspicion of labour by the onset of painful contractions of the uterus and commencing dilatation of the cervix. The pains stopped however, and she was comfortable until 26 hours after admission, when she complained of sudden abdominal pain and showed signs of distress, the pulse-rate rising to 126.

There was no abdominal rigidity, no sign of free fluid, and the fœtal heart was absent, though it had been heard a short time previously. A diagnosis of uterine rupture was made, and the abdomen was opened. Much blood, both fluid and clotted, was found free in the peritoneal cavity. At first the rupture was not apparent, but was soon discovered as a small hole, situated in the middle of a bluish area, the size of half-a-crown at the upper end of the old Cæsarean scar. The uterus was incised along the old scar and the dead fœtus was extracted, together with the placenta which was found adherent to the anterior wall. The area round the perforation was excised and the uterine wound was sutured. Convalescence was somewhat stormy, but the patient recovered and was discharged in 23 days with a normal involution of the uterus.

CASE 2.—Mrs. B, aged 33, a 3-gravida, had a flat pelvis (diag. conj. 9·0 cm.), and had been delivered twice by Cæsarean section. The first Cæsarean section had been done for obvious disproportion. The second was done by my house surgeon, under my supervision, after a trial of labour because the child was small and believed to be premature, though fœtal movements had not been felt for a week. The child, when delivered, was dead, having a soft hydrocephalic head and a spina bifida.

The patient was admitted to hospital complaining of labour pains, but uncertain of the period of gestation. She was allowed to continue in labour on account of the small size and prematurity of the fœtus, and because she had a cough. After labour had continued intermittently for 36 hours there was no progress, and the abdomen was opened with a local anæsthetic, and, towards the end of the operation, light chloroform anæsthesia. There were many adhesions between the omentum and the uterus, and a dense adhesion between the uterus and the anterior abdominal wall. On exposing the uterus the lower end of one of the previous scars was found to have split for a distance of 5 cm. without any appreciable hæmorrhage, and without rupture of the fœtal membranes, which, indeed, were bulging through the hole. The aperture was enlarged, the fœtus (weight 5·8 oz.) was extracted alive, and the placenta was found on the posterior wall of the uterus. The wall of the uterus was sewn up in the usual manner, with some difficulty owing to the partial anæsthetisation of the patient. Convalescence was good, the condition of the chest giving rise to very little trouble.

CASE 3.—Mrs. C, aged 38, had the following history. First child, premature, stillborn; second and fourth, Cæsarean section; third and fifth, premature, alive. She was admitted to hospital eight hours after the onset of labour, and two hours after the commencement of severe abdominal pain. Her colour was good, the pulse-rate was 120, and the fœtus was apparently in the uterus with the vertex presenting, but the fœtal heart sounds were not heard. The pulse-rate continued to rise, and four hours after admission it was noted that the fœtus was palpable in the left side of the abdomen, and the retracted fundus of the uterus to the right side.

The abdomen was opened with the use of spinal anæs-

[1] THE LANCET, 1927, ii., 598.

thesia (1 c.cm. stovaine), and the fœtus and placenta were found lying free in the peritoneal cavity, the amniotic sac remaining intact. The uterus had split throughout the whole length of one scar, the other being easily detected to the right side and was firmly retracted. The placental site had been on the anterior wall. Subtotal hysterectomy was rapidly performed, leaving the ovaries in situ. Most of the blood in the abdomen was clotted, and so was unsuitable for transfusion, so gum saline, 200 c.cm., was administered intravenously. The patient died one hour afterwards.

Cases 1 and 3 are of interest in that in both cases the scars had stood the strain of labour previously at, or near, full-term, and that when rupture occurred it was noticed that the placenta was situated on the anterior wall, which fact was noted in my first paper. In Case 2 rupture cannot be explained by this fact, but probably by imperfect technique, but, if the placenta had been situated anteriorly, rupture would almost certainly have been complete with loss of the child, and possibly of the mother.

On consideration of these facts it follows that, in cases of previous Cæsarean section, careful antenatal examination should be directed towards determining, if possible, the placental site.

DIAGNOSIS OF THE PLACENTAL SITE.

Palpation; round ligaments.—The round ligaments in pregnancy at, or near, full-term, can easily be palpated at the sides of the uterus, the left being always more easily felt than the right owing to the torsion and inclination to the right of the pregnant uterus. The presence of the placenta on the anterior wall of the uterus causing increased enlargement of the front part of the uterus causes these ligaments to be felt rather further back than normal, or not at all.

Fœtal triangle.—The outlines of the edge of the fœtal trunk and upper and lower limbs are obscured somewhat by the placenta situated in front.

Auscultation.—The fœtal heart sounds, being further from the surface, tend to be more distant than normal, and the tones may be partially or completely masked by the loud placental souffle to be heard all over the front of the uterus.

Prevention of this dangerous and unforseeable complication of labour lies in the performance of the lower uterine segment modification, rather than the classical Cæsarean section.

Spontaneous Rupture.

Mrs. D, aged 37, a 4-gravida, had two premature and one full-term child, the last being a premature delivery three and a half years previously. On antenatal examination it was noticed that there were two small fibroids palpable in the anterior uterine wall, but none in the lower uterine segment.

After the onset of labour full dilatation of cervix was attained in about one hour, but after that the contractions of the uterus became weak and infrequent. Quinine hydrochloride, grs. 10, was given twice, four and six hours after full dilatation, and had the effect of stimulating contractions, so that the head was driven down to the vulva low enough to be visible. To obviate the use of forceps at this stage, 2 units of pituitary extract were injected, and were followed by violent pains. The patient became blue, and her pulse-rate rose to 158. An arm of the fœtus could then be felt protruding through the wall of the uterus, low down on the left side. The abdomen was opened under stovaine spinal anæsthesia, and the dead fœtus and the uterus rapidly removed by supravaginal hysterectomy. The free blood and clots in the peritoneal cavity were collected, and filtered through sterile gauze and returned to her circulation by venous transfusion. After the operation the patient rallied a little at first, but died 14 hours afterwards.

Post-mortem sections of the kidneys showed signs of slight chronic and acute nephritis.

CLINICAL AND LABORATORY NOTES

A CASE OF ACUTE THROMBOPENIC PURPURA HÆMORRHAGICA CURED BY SPLENECTOMY.

BY H. S. LE MARQUAND, M.D., M.R.C.P. LOND.,
ASSISTANT PHYSICIAN TO THE ROYAL BERKSHIRE HOSPITAL, READING;
AND
JOHN MILLS, M.D. MANCH.,
PATHOLOGIST TO THE HOSPITAL.

WE report this case as an illustration of the excellent result of splenectomy in a case of acute thrombopenic purpura and because we consider that it may explain to some extent the heavy mortality usually ascribed to splenectomy in this condition.

Miss A was a trained nurse, aged 52. Nothing important was noted in the family history. She had suffered from recurring attacks of vomiting, from puberty at 13 to the menopause at 49. At first these attacks had coincided with the menstrual periods; later they had become more frequent. At the menopause they had ceased for one year. During an attack the patient was usually able to continue her work.

At the end of February, 1930, while nursing a case, the patient began to feel ill, and noticed purpuric spots on her arms and legs. On March 3rd nose-bleeding started. On March 4th the epistaxis was more severe and she felt very tired. On the following day she finished nursing her case and consulted her doctor, who referred her to the Royal Berkshire Hospital, where she was admitted on March 7th. The blood counts from the time of admission onwards are seen in Table I. During March 8th she suffered from headache, and vomited; these symptoms she regarded as due to one of her usual bilious attacks. Bleeding started from the mouth and nose and, since it continued throughout the day, resisting all local treatment, a transfusion of 600 c.cm. of citrated blood was given in the evening. After the transfusion bleeding ceased until noon of the next day, about 15 hours later. Bleeding then recurred from the mouth and the transfusion incision began to ooze.

On March 10th the patient's condition had become very serious; ecchymosis and purpuric spots had appeared all over the body and bleeding from mouth and nose and from the transfusion incisions in the arm had become continuous. She felt comparatively well after her transfusion; vomiting, headache, and feeling of tiredness had disappeared, and she did not realise the gravity of her condition. On March 11th all the symptoms had become still more severe. A transfusion of a pint and a half of citrated blood at 7 P.M. was entirely without effect on the hæmorrhage. On March 12th bleeding was continuous all day; some of the stools showed altered blood, more purpuric spots appeared, and the patient began to feel ill. On March 13th the number of purpuric spots was increasing so rapidly all over the body that the sister who was nursing the case stated that it was almost possible to watch them appearing. The transfusion incisions were oozing continuously and to such an extent as to soak through all the dressings, including bath towels.

It was obvious that the situation was becoming desperate and that transfusion as a means of controlling the bleeding was useless.

DIAGNOSIS.

Purpura hæmorrhagica is a disease characterised by marked diminution of platelets, prolonged bleeding time, normal coagulation time, and spontaneous hæmorrhages into skin and subcutaneous tissues and from mucous membranes. The condition may be idiopathic or secondary to some other disease, such as pernicious anæmia, leukæmia, aplastic anæmia, or possibly to the presence of a septic focus somewhere in the body. It is of the utmost importance that an early decision be made as to whether the

condition is primary or secondary, since treatment and prognosis depend on diagnosis.

It was obvious in the present instance that the condition was one of purpura, but it was a matter of some difficulty to decide whether primary or secondary. All the usual causes of purpura could be excluded, with the exception of an early acute leukæmia or a possible septic focus in the abdomen associated with the recurrent bilious attacks—e.g., the gall-bladder. The latter diagnosis was considered extremely unlikely and no positive signs supporting it could be found; a diagnosis of acute leukæmia, however, merited consideration. Reference to Table I. shows that on March 7th, when the patient was first examined, there were 2160 polymorphonuclear cells

TABLE I.

Date in 1930.	Hb. per-centage	Red cells per c.mm.	White cells. Per c.mm.	White cells. Differential.	Platelets per c.mm.
March 7th	80	4,300,000	7,200	Per cent. Per c.mm. P. 30 = 2160 L. 65 = 4680 M. 5 = 360	26,000
8th	Transfusion, 600 c.cm. of citrated blood.				
11th	,, 800 ,,				
13th	90	4,500,000	5,000	E. 2 = 100 P. 46 = 2300 L. 44 = 2200 M. 8 = 400	120,000
17th	72	4,000,000	13,000	P. 70 = 9100 L. 20 = 2600 M. 10 = 1300	160,000
18th	—	—	—	—	400,000
21st	—	4,300,000	9,600	E. 4 = 384 B. 2 = 192 P. 62 = 5952 L. 30 = 2880 M. 2 = 192	303,000
24th	80	4,000,000	8,800	E. 4 = 352 B. 2 = 176 P. 46 = 4048 L. 46 = 4048 M. 2 = 176	250,000
29th	—	3,700,000	8,200	P. 46 = 3772 L. 48 = 3936 M. 6 = 492	350,000
April 4th	80	4,300,000	6,800	E. 3 = 204 B. 1 = 68 P. 32 = 2176 L. 52 = 3536 M. 12 = 816	447,000
15th	90	4,150,000	6,800	E. 1 = 68 P. 40 = 2720 L. 54 = 3672 M. 5 = 340	274,000
August 6th	90	4,500,000	8,200	B. 2 = 164 P. 29 = 2378 L. 64 = 5248 M. 5 = 410	328,000

E. = Polymorphonuclear eosinophil. B. = Polymorphonuclear basophil. P. = Polymorphonuclear neutrophil. L. = Lymphocyte. M. = Monocyte.

and 4680 lymphocytes per c.mm. of blood. The former is at the lower limit and the latter above the upper limit of normal, assuming 7000 polymorphonuclears and 3000 lymphocytes per c.mm. as the maximum normal numbers. That is, there was at this time a relative and absolute lymphocytosis but no anæmia. Four days later there was still a low polymorphonuclear count but the lymphocyte count was an average normal. Such a count might be explained by a somewhat exhausted bone-marrow producing fewer than normal granular leucocytes whilst the normal number of lymphocytes are produced in the lymphoid tissues, a state of affairs which one might expect in idiopathic purpura hæmorrhagica. It might, however, be regarded as indicating an early leukæmia.

In Table II. are given blood counts from two cases of acute leukæmia observed by us during the past few months. The first showed no anæmia, great absolute lymphocytosis, enlarged lymphatic glands, and an enlarged spleen. The second showed a

TABLE II.

Case.	Red cells per c.mm.	White cells. Per c.mm.	White cells. Differential.	Platelets.
			Per cent. Per c.mm.	
1	4,450,000	307,500	P. 3 = 9,225 L. 97 = 298,275	—
2	1,900,000	2,300	P. 12 = 276 L. 88 = 2,024	24,000

marked anæmia, and a decreased white cell count, but the spleen and lymph glands were not enlarged. Both cases showed purpura at the time the counts were made. In the first case the diagnosis was confirmed at post-mortem examination and the subsequent clinical course of the second made leukæmia the only possible diagnosis, though we were unable to obtain a post-mortem.

It is clear therefore that in the present case leukæmia could not be absolutely excluded on the grounds that there was neither anæmia, increased number of white cells per c.mm. of blood, nor enlarged spleen. At the outset we considered it advisable to watch the patient for some time before making a final diagnosis, meanwhile controlling the bleeding by transfusion. When transfusion failed, it was obvious that a decision had to be made without further delay. If the case were one of idiopathic purpura hæmorrhagica, immediate splenectomy before the patient's condition deteriorated further offered the best chance of recovery. It was therefore decided to remove the spleen and risk the possibility of the case being one of leukæmia. If this was the correct diagnosis the prognosis was in any case hopeless and could hardly be made worse by operation.

Treatment.

On March 13th Mr. J. L. Joyce was called into consultation with a view to splenectomy. He considered that the patient's condition was then quite good, and removed the spleen the same day.

At the operation all incisions were made by diathermy; the spleen was found bound down by fairly firm fibrous adhesions but otherwise appeared normal to naked-eye examination. A transfusion of citrated blood was given during the operation and very little bleeding was experienced. After the operation all bleeding stopped and did not recur. By March 18th all purpuric spots had disappeared and recovery was uneventful. Blood counts subsequent to operation are shown in Table I., and it is of interest to note that the lymphocytosis still persists, almost five months after operation, when the patient is back at work and feeling quite well.

The spleen measures 12 by 4 by 7 cm. and weighs approximately 160 g. It appears normal in size and shape, and on histological examination shows nothing more than engorgement of the sinuses with blood.

Spence,[1] in 1928, analysed 101 cases of this disease in which splenectomy had been performed; of 12 acute cases 10 died. In our opinion this high mortality is due to two factors, First, there is the difficulty of early diagnosis, and consequent delay in operating. By the time the diagnosis is made the patient is either too ill to stand the operation or his bone-marrow is so exhausted that, if the operation is successful, manufacture of platelets is at such a low level that the purpura continues. Secondly, there is the possibility of error in diagnosis leading to splenectomy in some such disease as leukæmia in which the purpura is secondary. A number of the fatal results reported in the literature undoubtedly

fall into one or other of these two groups, and the consequent very heavy mortality has deterred surgeons from performing splenectomy until every other method of treatment has been tried. We are inclined to the view that this attitude to splenectomy is wrong, and that early operation will reduce the mortality considerably. In 1929 several writers [2 3] emphasised these points and reported similar successful cases.

References.—1. Spence, A. W.: Brit. Jour. Surg., 1928, xv., 466. 2. Killiers, W. A.: Jour. Amer. Med. Assoc., 1929, xcii., 1032. 3. Litchfield, H. R.: Arch. Pediat., 1929, xlvi., 511.

ACUTE PANCREATITIS FOLLOWING LYSOL POISONING.

By Victor Dellal, M.R.C.S. Eng.,

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A MARRIED woman, aged 31, was admitted to the Lowestoft and North Suffolk Hospital after having drunk some lysol. Her stomach was washed out before admission to hospital. That only a little of the poison was taken was shown by the fact that there was merely a small patch of corrosion at the back of the throat; the mouth and lips showed no sign of burning. Her temperature was 98·8° F., the pulse-rate 88, and the respirations 20. She looked pale, was quite conscious, and complained of no abdominal pain or burning in the mouth. There was neither rigidity nor tenderness of the abdomen, which moved quite normally on respiration. Under ordinary treatment she made very good progress until the afternoon of the fourth day, when abdominal pain was complained of for the first time, and examination showed the presence of tenderness and rigidity over the upper part of the abdomen. Her temperature was 99°, the pulse-rate 96, the respirations 28. The urine contained a cloud of albumin, but showed no indication of lysol poisoning. Her condition became gradually worse, though she was never unconscious. On the fifth day she rapidly went downhill and died early in the afternoon.

As the patient had done so well during the first three days we were uncertain about the cause of death, and arrangements were therefore made with the coroner for a necropsy. Very little was found in the stomach and upper part of the small intestine to suggest lysol poisoning. The pancreas showed typical appearances of acute hæmorrhagic degeneration and extensive fat necrosis was present throughout the abdominal cavity; the mesentery of the small intestine, in fact, was almost a solid mass of fat necrosis. The kidneys were slightly congested; the liver appeared normal. In the right pleural cavity there were recent adhesions, and about 15 oz. of pale fluid were found. There was adequate proof that the woman had drunk lysol, but evidently little had been taken.

Not having heard that lysol poisoning may produce acute pancreatitis, or indeed that the latter can be caused by any poison at all, I explained the situation to the coroner and mentioned that the lysol had played very little part, if any, in causing death. He thus returned a verdict of death from acute pancreatitis; no mention was made of the taking of lysol. It would be interesting to know if any cases are on record of acute hæmorrhagic pancreatitis ensuing on lysol poisoning.

I am indebted to Dr. F. P. Halkyard for permission to report this case.

A FATAL CASE OF ANTHRAX.

By Adam L. K. Rankin, M.D., D.P.H. Edin.,

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THE following case illustrates the profound toxæmia and the rapid fatality of an anterior cervical infection by anthrax. The patient was a ragman, aged 53. His occupation consisted in superintending the unloading of bales of rags from ships and their subsequent transport to a large paper factory. He himself often carried on his right shoulder some of the smaller bales weighing about one to two hundredweight. These bales were imported from the continent, mainly Belgium and Germany, and I understand that they very often lay in the ships' holds in contact with hides.

The patient first complained of feeling unwell on Nov. 28th, 1930. He said he felt shivery and he had a swelling on the right side of his face and neck which was uncomfortable.

Photograph showing lesion in the neck.

On the 30th he consulted a practitioner who sent him to the City Hospital on the following day as an observation case of erysipelas.

On admission he was obviously very ill and toxic. He was cyanosed and dyspnœic; temperature 100° F., pulse rapid and weak. There was no complaint of pain in the neck. On examination there was a large amount of swelling and œdema of the right side of the neck extending from behind and below the right ear down to the level of the clavicle and manubrium sterni. The swelling involved the whole of the anterior triangle of the neck. There was also considerable brawny swelling of the tissues in the mid-line of the neck causing pressure on the trachea and consequent cyanosis and dyspnœa. There was a small superficial depressed black eschar situated about three inches below the right ear. Numerous vesicles tending to become confluent surrounded the eschar. The tissues around the eschar were red, extremely œdematous, and slightly tender on palpation. There were no constitutional symptoms apart from profuse perspiration. Films made from the vesicles showed typical anthrax bacilli in large numbers. A blood culture taken on admission also showed the presence of numerous *B. anthracis*.

Treatment.—Hot eusol fomentations were applied locally and 60 c.cm. of Sclavo's serum administered (30 c.cm. intravenously and 30 c.cm. intramuscularly). On the following morning the patient was much weaker; 100 c.cm. of Sclavo's serum was given intravenously but the patient died that evening, 24 hours after admission, and apparently on the fifth day of the disease.

I wish to thank Dr. W. T. Benson, medical superintendent, for permission to publish this case.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE.

SECTIONS OF NEUROLOGY AND PSYCHIATRY.

AT a joint meeting of these Sections held on Feb. 12th the President of the Section of Psychiatry, Dr. S. A. KINNIER WILSON, took the chair, and Dr. GORDON HOLMES opened a discussion on

Mental Symptoms Associated with Brain Tumours.

Divergence of opinion, he remarked, arose from the fact that the psychiatrist rarely found evidence of intracranial neoplasm in his patients but the neurologist knew that a relatively large proportion of patients with increased intracranial pressure presented some abnormalities of mind. The direct cause of these mental symptoms varied; some authorities had incriminated the diffuse inflammatory reaction in the meninges sometimes found in cerebral tumours, comparing it to the meningeal changes in general paralysis of the insane and cerebral syphilis, but this reaction was too inconstant and mild to provide a general explanation. The theory that the symptoms were due to intoxication by break-down products was refuted by the fact that they were associated with every kind of cerebral tumour.

The most common cause of mental symptoms was undoubtedly raised pressure, which, besides causing local symptoms, interfered with circulation and the drainage of the cerebro-spinal fluid. In some cases, however, the important factors were the site of the tumour and the structures injured by it. The drowsiness and somnolence associated with lesions of the infundibular region and the changes in character and temperament found in association with pituitary growths were well recognised. Disturbances of the speech mechanism were very commonly associated with mental disturbance, for the patient failed to understand why his words brought no adequate response and why his attendants spoke to him in meaningless sounds, and became irritable and excited or depressed. Both aphasia and apraxia were probably always associated with some degree of intellectual impairment, as were also probably the various types of disorientation found in parietal lesions. Paralyses due to involvement of motor centres and tracts, disturbances of vision, headache, vomiting, and epileptic attacks all frequently evoked psychological reactions of a depressive or an anxious type.

MENTAL DISTURBANCES ASSOCIATED WITH TUMOURS OF THE FRONTAL LOBE.

Lesions of the frontal lobe produced mental symptoms perhaps more frequently than those of any other part of the brain except the corpus callosum. Experiments on removal of the frontal lobe from animals had shown an increase of impulsiveness and aggressiveness, suggesting absence of higher inhibition, and a diminished adaptation to the surroundings, and Monakow had suggested that the frontal lobe played an important part in the association and elaboration of intellectual data. More permanent symptoms were probably due to compression or destruction of frontal lobe tissue; they often preceded the local symptoms and might be the first observed. It was impossible to give a clear-cut picture of them, as they occurred in numerous combinations. Perhaps the most common syndrome was characterised by apathy, retardation, lack of initiative, and failure of attention; it often suggested neurasthenia. Memory, especially for recent events, might be affected, probably because of the failure of attention. A second type of disturbance was chiefly marked by depression, associated with general mental enfeeblement, drowsiness, and periods of stupor. The patient reacted mechanically and was often incontinent; confusion on awaking from sleep or after fatigue might be a prominent symptom. A third type, not so frequent, was distinguished by restlessness, exuberance, euphoria, egotism, and a general childishness, together with a tendency to facetiousness that had been described as *Witzelsucht* or *jeu de mots*. These symptoms might alternate with periods of depression.

In some cases the mental symptoms might bear a superficial resemblance to those of general paralysis but were due to confusion rather than dementia. When, however, the symptoms of mental deterioration were associated with tremulousness, poverty of expression, dysarthria, a mild degree of aphasia, and perhaps convulsive phenomena, the resemblance might be striking. Dr. Holmes concluded that a more extensive analysis of the mental symptoms of frontal lobe tumours promised to throw light upon the action of the brain as the organ of the mind.

Dr. F. L. GOLLA quoted statistics from Claybury Mental Hospital and the Maudsley Hospital. In the first institution 37 cases of cerebral tumour had been found post mortem in 11 years, and insanity could be ascribed to the growth in 22 cases. In all of the 34 cases studied during the past eight years in the Central Pathological Laboratory the mental symptoms were directly referable to the tumour. There was an overwhelming preponderance of temporal tumours, especially right-sided. The symptomatology could be summed up as dull, confused, and amnesic, with aphasia when the left temporal region was involved. He considered that facetiousness was merely a conscious defensive reaction. The low number of subtentorial tumours made it unlikely that mental symptoms could be explained by increased intracranial pressure alone. Systematised disorders of conduct occurred in any general poisoning of the nervous system; given a general enfeeblement of the powers of cerebral coördination, it was reasonable to expect that the response of the brain as a whole would be determined largely by the previous history. It was unnecessary to assume specific lesions of certain functional systems. The nervous system was almost infinitely labile, and the same final reaction might be reached in many different ways. Psychiatrists had always wistfully hoped that the inconceivable complexity of mental life might be resolved into a number of static mechanisms; nevertheless, the mind and its nervous substrata functioned as a whole, and psychiatry was unlikely to derive much help from the study of isolated lesions.

Dr. RUSSELL BRAIN pointed out that one of the greatest difficulties in the localisation of intracranial tumours was to separate the local symptoms of the growth itself from the secondary symptoms produced by increased intracranial pressure. He described some illustrative cases of tumour of the cerebellum associated with mental symptoms. He concluded

that profound mental disturbances, including visual and olfactory hallucinations and dysphasia, might be produced by tumours in the posterior fossa, which were commoner in elderly persons than in children. Vascular disturbances, especially œdema, might play an important part, but tension of the brain tissue might also be responsible. Mental symptoms produced by local pressure were indistinguishable from those produced by remote effects of a growth. An accurate history was very important, and in cases of cerebellar tumour giddiness, instability, and a tendency to fall preceded the mental disturbance by a significant interval. Greatly increased intracranial pressure indicated by severe papillœdema, which was rare with frontal lobe tumours, might suggest a subtentorial growth. Ventricular estimation and ventriculography might be of great assistance in doubtful cases.

CEREBRAL TUMOURS IN MENTAL HOSPITALS.

Dr. JOHN BRANDER, quoting from the results of 2500 consecutive autopsies in a mental hospital, demonstrated that the incidence of cerebral tumour—about 0·5 per cent. of the total admissions—was not a common cause of the grosser mental disorders. Sixteen of the tumours had occurred in women and 28 in men; among the women only 6 had been primary, but among the men 24. The primary tumours had appeared to produce much more mental disturbance than the secondary. The same proportion of cerebral tumours had occurred among the nursing staff as among the mental patients. Tumours often merely rendered manifest a latent tendency to a psychosis, which might be of any one of a number of different types irrespective of the site of the tumour. Five nævoid tumours had been found, all in epileptics manifesting the typical temperament and behaviour irrespective of the site of the growth. Some of the epileptic symptoms had localising value, but none of the mental symptoms. He suggested that an attempt be made to distinguish between cases in which there was obstruction of the aqueduct or within the ventricles, and tumours in the foramen magnum or of the brain stem, which seemed to produce intracranial pressure.

Dr. N. G. HARRIS said that out of 365 autopsies on mental patients he had found four cerebral tumours in women and one in a man. The man had been an imbecile epileptic and his fits—except the status epilepticus in which he had died—had seemed unconnected with the growth. In the women the mental symptoms of dullness, depression, and apathy had only appeared towards the end of a long stay in hospital.

Dr. EDWARD MAPOTHER mentioned that a certain number of cases that had been at the Maudsley Hospital had died at King's College Hospital and so had not come under Dr. Golla's notice. If they had, perhaps the proportion of cases with aphasia in his statistics would have been higher, because aphasia was the one localising sign common in cerebral tumours admitted to hospital for mental reasons. A large number of the patients who had died in the Maudsley Hospital, though suspected of cerebral tumour and examined by an expert, had not shown papillœdema until just before death. The absence of physical signs, localising signs, and papillœdema perhaps explained why cerebral tumour cases coming under notice for mental symptoms seemed uniformly unfavourable. He was entirely sceptical about the localising value of mental symptoms. The *Witzelsucht* shown by a recent patient had seemed to be merely an accentuation of his normal temperament. A striking feature of the mental symptoms of cerebral tumours was their extreme chronicity.

Dr. C. P. SYMONDS said that material for generalisation should be sought only in those patients in whom mental symptoms had preceded the symptoms of increased intracranial pressure, preferably by some months. It was the tumour growing in a relatively silent area of the brain—either the prefrontal lobe, the temporal lobe, or the corpus callosum—which was likely in its early stages to produce mental symptoms without those of increased intracranial pressure. The early development of mental symptoms in a case of cerebral tumour seemed to depend rather upon the amount of white matter destroyed than upon the precise localisation. In a tumour of the left side or of the corpus callosum the observer was guided in localisation by aphasia and apraxia. It was a person who had what was clearly a mental disorder of the organic reaction type, without symptoms of increased intracranial pressure or evidence of cerebral syphilis or at an age when cerebral arterio-sclerosis was not to be expected, who might be suspected by a process of exclusion to be suffering from a tumour of one or other frontal lobe or of the right temporal lobe.

Dr. C. C. WORSTER-DROUGHT maintained that cerebral tumour was very rarely a cause of mental disorder—apart from minor psychical disturbances—and had little to do with the type of the disorder, which was determined by the biological and psychological constitution. A lesion of the left frontal lobe was much more likely to produce symptoms tending towards dementia and disorders of conduct than one of the right frontal lobe, which, on the other hand, was more likely to be associated with amnesia and similar disorders. In mid-brain tumours the tendency was rather to euphoria and emotional disturbances.

Dr. ISAAC FROST said that he had recently obtained some evidence of considerable daily fluctuations in the hæmoglobin content of the blood of idiopathic epileptics, changes which could not be explained on the hypothesis of an anæmia, and he was searching tentatively for a reservoir into which corpuscles could disappear. He asked whether Dr. Brander thought that nævoid tumours, from their size and structure, might conceivably act as reservoirs for blood corpuscles.

The PRESIDENT pointed out that a psychiatrist used the word "mental" in the meaning of a systematised psychosis, but that the neurologist included minor mental disturbances in his use of the term, hoping to derive some data from them. He had little hope that the quest would be successful. He thought that there was a great deal of difference between the two halves of the brain. He always inquired whether or not the tumour was related to either of the two great associational systems of the cerebrum: the corpus callosum or the inferior longitudinal fasciculus. If the corpus callosum were involved, so-called mental symptoms were more likely to occur. The fibres in the corpus callosum came from the whole of the hemispheres and were collected there. The most difficult tumour to localise was a right temporal tumour in a right-handed person. Cerebral tumours rarely ended in asylums, because they were not large enough to produce symptoms necessitating segregation. Patients with disseminated sclerosis practically never died in asylums, because there was no cortical involvement but mainly a ventricular one. Tumours in the region of the ventricular system tended to give rise to emotional symptoms, and tumours related

to the cortical system tended to give rise to symptoms of a more intellectual character, especially if one of the two large associational systems was involved.

SECTION OF LARYNGOLOGY.

A MEETING of this Section on Feb. 6th, with Mr. FRANK ROSE, the President, in the chair, was devoted to

Frontal Sinusitis and its Treatment.

Mr. J. P. STEWART (Edinburgh) opened with a paper by himself and Mr. J. S. FRASER which covered all the cases of frontal sinus affections seen in the ear and throat department of the Edinburgh Royal Infirmary and treated by conservative methods and by intranasal operation (1921–30); also all the cases seen in their private practice from 1906 to 1930; and all the cases operated on by the external route, both hospital and private. The cases were divided into acute and chronic, the latter being all of more than six months' duration. In 338 the sinus was affected either alone or in association with other paranasal sinuses; 241 of these were acute and 31 of them were bilateral.

Acute sinusitis.—Males numbered 160, females 81 in the acute series. The ages ranged from 11 years to 70. In 61 of these acute cases the trouble had lasted no more than a week when the patient was seen, in 42 two weeks, and in 19 three weeks, while in two the period was seven weeks, and in 22 three months or more up to six months. Either coryza or influenza was held responsible for at least 142, injury for 14 cases. In 230 of the acute cases there was a complaint of frontal headache, and in at least 183 the pain was periodic, usually in the morning and until 2 or 3 P.M. When the pus was under great tension, a continual throbbing pain was present. Since patients who were night nurses had the pain soon after taking on their night duties, it probably depended on assumption of the erect posture. In 125 cases there was tenderness on pressure on the anterior wall of the sinus, or its floor, while an orbital complication was noted in 23. There was pus in the anterior part of the middle meatus in 128, pus and polypus in 38. In 57 pus was absent. In 50 of the unilateral cases the septum was deviated to the affected side, to the non-affected side in 16. The organism most often found in the pus was the streptococcus; others included pneumococci, staphylococci, influenza bacilli, diphtheroids, and *Bacillus coli*. By radiography, the frontal sinuses only were cloudy in 42 cases, the frontals, ethmoids, and antra in 60. In seven of the cases all the sinuses were obscured.

Of the 241 acute cases, 161 were treated by conservative methods only: menthol inhalations, head light baths, and analgesic powders. In acute cases in which the frontal, ethmoid, and antrum were affected, intranasal operation on the antrum alone, with treatment by inhalations, and possibly head light baths, often brought about a cure without the need for operation. Results were ascertained in only 70 cases, and these showed that 46 had been cured by conservative methods, 16 were relieved—i.e., there was pain only during acute coryza—while in six there was still pain and discharge. Intranasal operation was done in 66 cases, and for these local anæsthesia alone was used in 52, the remaining 14 having both local and general. Only exceptionally was an attempt made to wash out the sinus with a cannula, dependence being placed on the free drainage brought about by opening up the posterior ethmoidal cells. In addition, submucous resection of the septum was done in 12 cases, and in 24 others the maxillary sinus was drained. One patient developed erysipelas, another had scarlet fever. Cure resulted in 32 cases, in three there was a slight recurrence of frontal pain in the presence of coryza, in eight the discharge still persisted but without pain, while in 23 the result was unknown. External operation was done in 14 cases.

Chronic sinusitis.—In the 97 chronic cases the condition had existed six months or longer; 64 complained of frontal headache, but in only 22 was this periodical. In 36 there was tenderness over the frontal sinus, and an orbital complication—swelling of the upper eyelid—in 23. The frontal sinuses only were cloudy in 10, frontals, antra, and ethmoids in 36, and all the sinuses were cloudy in 16. The ethmoids and maxillary antra were affected in 55 cases, and pansinusitis was present in 13. In 18 cases the patients would consent only to conservative treatment; six of them were relieved, seven remained as before; in five there was no report. In 39 cases in this category the frontal sinus was drained by the intranasal route; submucous resection of the septum was done in three cases, drainage of the maxillary antrum in 17 in addition to the frontal sinus operation. As to results, there was a cure in 16, in six the discharge continued but there was no pain. In six there was both pain and discharge; no report in 10 cases. The external operation was done in 40 cases, 31 of whom had been already operated upon. Pus and granulations were found in 27 cases, pus and polypoid tissue in 10 cases, mucocele in three. As to complications, there was severe fever in one, slight in three, pneumonia (recovered) one, serous meningitis (recovery) two, corneal ulcer (vision recovered) one, meningitis (fatal) three cases.

INTUBATION.

Mr. DOUGLAS HARMER described his treatment by intubation and analysed 63 cases of sinus trouble so dealt with. Under general anæsthesia an incision ¾ in. long was made immediately below the inner end of the eyebrow, and the sinus was opened through the anterior wall. A thin probe was then passed downwards into the nose, and a soft rubber catheter was drawn up and anchored in the wound. After about ten days the tube was replaced, usually by one of larger size, and this replacement should be repeated at regular intervals. The operation could usually be completed in 15 minutes; so small was the shock that in a day or two the patient was able to leave his bed. For about a week the sinus was daily irrigated through a tube with normal saline or peroxide of hydrogen. In cases of chronic sinusitis it was necessary for the patient to wear the tube for several months, but this caused no discomfort, nor did it interfere with the restarting of work in a few days. The frontonasal duct could be permanently dilated and bone absorption took place around the tube. With careful after-treatment most of the cases could be relieved and many of them cured, without disfigurement or at least with less than was left by radical operation. The operation he declared quite free from danger, and it had often been done in cases where more radical methods would have been inadvisable. Its object was to provide free drainage and ventilation, both externally and internally, and to dilate the bony frontonasal canal without damaging its lining membrane. If tubes of slowly increasing size were employed there was no irritation or inflammation, and the lining of the sinus usually recovered quickly. In successful cases a straight passage from the nose to the sinus was obtained, and through this a cannula

could easily be passed. The cases in which this treatment was likely to fail were those where long-standing inflammation had caused a scarring of the soft tissues; it was especially likely to fail in those operated on several times previously, for in many of these the ducts existed no longer, being replaced by scar tissue. Of 15 cases of acute sinusitis the pain had been permanently relieved in 12, and the discharge was relieved in 10. One patient died of cerebral abscess. In 35 cases of chronic sinusitis, pain was relieved in 16, the discharge in 19. One patient died from erysipelas two years later, another destroyed himself. In a large percentage of the cases the wounds healed up so well that the scars were almost invisible. No fatal result could be attributed to this operation.

Mr. WALTER HOWARTH read a paper on the

TREATMENT OF CHRONIC FRONTAL SINUSITIS.

Most cases of acute sinus inflammation, he said, whether catarrhal or purulent, tended to heal spontaneously. The main factor in such a result was the possibility of inflammatory products escaping freely from the affected sinus. In the frontal sinus were many factors which might interfere with this, and any of these might cause the case to become chronic. High deviations of the septum and displacements of the middle turbinate—and overgrowths of it—might obstruct the frontonasal duct. The development in this region of inflammatory processes, such as polypi and local hypertrophic conditions, often seen in those having a dusty occupation, favoured the condition becoming chronic. It was his belief that infections due to the influenza bacillus were more likely to lead to chronic sinusitis than those due to other organisms. Ventilation and proper aeration of the region was very necessary. It was always his aim to adopt the simplest measures which might be necessary in each case, interfering as little as possible with the natural process of repair. This simplicity was more possible in recent cases than in those which had lasted some time. He believed that the frontal sinus and the anterior ethmoid cells were, nearly always, simultaneously involved, consequently the operation planned must be such as would drain both adequately. He removed as much of the anterior part of the labyrinth as might be seen to be necessary. He relied on subsequent sounding to cure the overlying sinusitis. Though many cases could be cured by intranasal methods, there were a residue in which headache, tenderness, discharge, and eye symptoms persisted. These he had dealt with for ten years by the operation which was associated with his name, and which he regarded as a conservative operation, since it merely sought to provide efficient drainage for the sinus into the nose, at the same time permitting removal of the ethmoidal disease. No set operation was applicable to all conditions, and he did not suggest that his operation could cure every case, but the method of approach was a good one, and the operation could be modified to meet varying conditions. As to maintaining the patency of the new frontonasal duct, in most cases no difficulty arose; retention of the rubber drainage-tube for ten days, and the subsequent application of the bougie, with occasional touching of the granulations with nitrate of silver, was all that was needed. But in some cases the upper part of the nose was very narrow, and the opening was too slit-like. In some cases he had covered the raw bony surface with skin-grafts. Unless the ethmoidal disease was removed, reinfection of the cavity might take place, and so the ultimate cure be delayed.

A discussion followed.

MEDICAL WOMEN'S FEDERATION.

AT a meeting of the London Association of the Medical Women's Federation on Jan. 27th the chair was taken by the President, Dr. LETITIA FAIRFIELD, and a paper on

The Uses and Limitations of Operations on the Ear

was read by Miss MILDRED WARDE. She said that malformations of the outer ear varied greatly in severity, but were generally associated with normal hearing. Operation depended on the amount of deformity, and should be deferred until adolescence. If the meatus was occluded operation was usually unsuccessful, as it replaced soft tissue by hard scar and rendered hearing worse. In furunculosis it was always difficult to decide when to operate. General anæsthesia was required unless the abscess was pointing, in which case it was best opened by a sharp bistoury without anæsthesia. Exostoses might be simple or multiple, and were not important unless large enough to occlude the meatus. When associated with suppurative otitis media they obstructed discharge and must be removed, but the operation was unpleasant. Bands and adhesions might be found in patients deaf from old middle-ear disease, and there was a temptation to divide these or to perforate the drum, but it was impossible to keep the opening patent and the patient was worse than before. In acute otitis media paracentesis was indicated as soon as the drum showed bulging; the incision should be vertical, behind the handle of the malleus, and reaching to the floor of the meatus. There was considerable risk that only a small part of the diamond-shaped knife would actually perforate the tympanum. If the pain recurred and drainage was unsatisfactory, the operation should be repeated.

It was often difficult to know when to recommend operation for acute mastoid inflammation. Signs and symptoms might be equivocal when the mastoid cells were full of pus. If no focus of infection could be found in the nasopharynx the operation should be advised for all cases of persistent nasal discharge which did not respond to treatment in about a fortnight. This rule, however, was constantly broken for individual cases. The operation was to save hearing rather than life; hearing in these cases deteriorated at the age of about 45.

Chronic discharging ears could be divided into various groups. Those with large perforations and occasional reinfection from the nasopharynx responded to cleansing methods. Various ways of closing the Eustachian tube had been tried but were not without risk. A marginal perforation with granulations should have a radical mastoid operation if there was dead bone but otherwise responded to cleansing and caustics. The rationale of the radical operation was to remove dead tissue and lay the whole cavity open to drainage; the hearing was often worse after it. If the suppuration was confined to the attic, conservative operation might prove satisfactory. Acute labyrinthitis required sedative treatment in bed, but a dead labyrinth was a source of danger to the meninges, and any operation on an ear with a dead labyrinth should include drainage of this cavity. A mastoid operation should never be performed without testing labyrinthine function. True labyrinthine vertigo was very alarming and might be dangerous; it might be relieved by a mastoid operation.

In reply to questions, Miss Warde added that chronic aural discharge in children was often very

hard to deal with and continued in spite of all treatment. Such children usually had poor general resistance and lived in bad surroundings. Ionisation was a good method in careful hands but required endless time and patience and great skill. To avert recurrence it was essential to get the whole ear and every little hole and corner full of the lotion. The object was to coagulate the whole surface layer and produce an absolutely sterile cavity. If there were beds enough to take all acute otitis cases these chronic discharging ears would not be seen. If ionisation did not stop the discharge it cleared up the surface infection, which was often keeping up the discharge. If ionisation failed, a radical mastoid operation was indicated unless the discharge was coming from the Eustachian tube.

Dr. HAZEL CHODAK GREGORY said that ear infection with pus in the mastoid might cause diarrhœa, vomiting, fever, or inanition in infants, but could not be detected by present methods of examination.—Miss WARDE thought it was improbable that the drum was normal in these cases. Two diagnostic points were pulsation and offensiveness of the ear discharge; a discharge that remained offensive after cleansing should always cause suspicion of the mastoid, and pulsation in the discharge meant active infection. If no adequate explanation of a baby's severe illness could be found and there was an aural discharge, it was perhaps justifiable to operate on the mastoid.

Lady BARRETT urged the importance of consultation between the children's physician and the aural surgeon in cases of infants.

ASSOCIATION OF CLINICAL PATHOLOGISTS.

THE annual general meeting of this Association was held at the Hospital for Sick Children, Great Ormond-street, London, on Jan. 31st, with Dr. DAVID NABARRO in the chair. A discussion on

Vaccine Therapy

was opened by Dr. C. E. JENKINS. It was sometimes contended, he said, that vaccine therapy must be useless if used in the face of an infection because it was futile to expect the body to respond to further doses of the infecting organisms. This contention he regarded as fallacious. The aim of vaccine therapy should be to induce an immunogenic response on the part of tissues other than those actually invaded by the infecting organisms. The response of the tissues to living and dead organisms was different. Living organisms were able to some extent to inhibit the product of immune bodies by the tissues, but dead organisms had no such inhibitory effect. The aim of vaccine therapy should be to convert a patient susceptible to the attacks of a particular organism into a refractory subject.

Dr. DENNIS EMBLETON, speaking on the investigation of cases with a view to vaccine therapy, expressed the opinion that no proof existed of the therapeutic value of vaccines. Several members disagreed with this statement, and Dr. JENKINS said that, although statistical proof might be lacking and might even be impossible to obtain, there was overwhelming evidence in favour of their value.—Dr. S. C. DYKE pointed out that many of the most successful results of vaccine therapy—e.g., in boils and the common cold—were obtained not by curing the existing lesion but by preventing future ones; in this respect such treatment might be regarded as prophylactic rather than therapeutic.

Dr. ARNOLD RENSHAW outlined an elaborate scheme for the investigation of rheumatic cases with a view to their treatment by vaccines. The earlier the case was seen, he said, the greater was the measure of success to be looked for; he laid great stress upon the discovery and eradication of focal sepsis. Various members thought it was unreasonable to subject patients to the extensive routine investigation demanded by Dr. Renshaw.—Dr. SINCLAIR MILLER and others drew attention to the disturbance of carbohydrate tolerance and hepatic function as revealed by the lævulose-tolerance test in rheumatic cases.—Dr. RENSHAW said that disturbance of carbohydrate tolerance was common and that such cases, contrary to the common opinion, usually did better with limitation of the carbohydrates and plenty of meat in the diet.

Dr. A. F. WRIGHT briefly reviewed the general considerations governing the preparation of vaccines. He held that the antigen used should be altered as little as possible by subculture; he recommended killing by heat and standardisation by opacity. Several members expressed the opinion that killing of the organisms was better carried out by chemicals than by heat.

Dr. CRONIN LOWE described his technique for selection of organisms for preparation of vaccines by means of blood selection. Swabs from the patient are sown into the patient's own blood, the organism which grows in the blood being that selected for preparation of the vaccine.

Dr. A. G. SHERA laid stress on the importance of the inclusion of the toxic products of the organisms as well as the organisms themselves in vaccines. He regarded this as being of especial importance in the case of the staphylococci and streptococci. It was his custom, he said, to add to his emulsions of organisms filtrate from broth cultures to the extent of 5 per cent.

Dr. JENKINS described his technique for the preparation of "residual" vaccines.

MANCHESTER MEDICAL SOCIETY.

AT a recent meeting of this Society Mr. J. HOWSON RAY, the President, took the chair, and a paper on

Lower Abdominal Pain

was read by Prof. W. FLETCHER SHAW. This common symptom in women might, he said, be produced by a large number of different conditions—medical, surgical, or gynæcological—and it was necessary to keep them all in mind when investigating a case; for failing a correct diagnosis, the patients might be subjected to a useless operation. The gynæcological conditions most commonly causing this chronic aching pain were laxity of the pelvic floor and pelvic adhesions, but a large number of other conditions might also produce it—e.g., fibroids, ovarian cysts, carcinoma cervicis, chronic cervicitis, malignant ovaries, endometriomata, prolapsed ovary, retroflexion of uterus, endocrine irregularity, chronic endometritis, subinvolution, varicocele, polypi, and carcinoma of body of uteri. All these had to be borne in mind in a patient with this symptom. It must also be remembered that many of these patients were mothers of young families, worn out mentally and physically by their responsibilities, and that

this fatigue was often much more important than a minor pathological lesion. In such cases complete rest and holiday away from the family did more good than an operation.

Dr. FRANK TYLECOTE confined his remarks to causes of lower abdominal pain which did not, at first at any rate, involve transfer to a surgeon. Among these he mentioned constipation, hæmorrhoids, abdominal fibrositis, and pain from adenitis caused by superficial irritation from a focus of sepsis in the leg. He had found it worth while, he said, to inspect the lower limbs in doubtful cases of lower abdominal pain. Statements made by patients that they were not constipated should not be accepted without confirmation, and in cases of diarrhœa the possibility that loose stools were due to irritation by a scybalous mass should be remembered. Constipation and hæmorrhoids were common causes of abdominal pain, while an overloaded colon might cause much discomfort, pain, and toxæmia, and occasionally a considerable pyrexia. Where malignant disease of the descending colon or rectum was suspected a single rectal examination or a single barium enema might fail to disclose the condition and sigmoidoscopy might fail to show a growth which was present. Repeated examination was required if a doubt persisted. Endothelioma of the peritoneum might cause very severe lower abdominal pain at a time when physical signs might still be indefinite, but ascites would soon follow. Enteroptosis was a common cause of lower abdominal pain, but the appearance of the abdomen on standing would often suggest the diagnosis, while visceroptotic pain had well-recognised characteristics. Abdominal influenza might begin with diarrhœa without vomiting but with collapse, although it was more often thought of as a diagnosis when both vomiting and diarrhœa were present. He mentioned a case in a youth in which there was much blood in the stools associated with great collapse and a typical influenzal tongue and throat, which did not begin to improve until large doses of salicylates were given. Intestinal crises associated with Henoch's purpura, with angioneurotic œdema, with tabes dorsalis—the so-called enterospasm—and even with minute embolic formations in the course of a case of septic endocarditis, should never be forgotten. Abdominal Hodgkin's disease in its early stages was most likely to be confused with other causes of abdominal pain, but in its later stages abdominal pain might occur from deposits in the vertebræ. Abdominal herpes zoster might be preceded as well as followed by intense abdominal pain. The best early guide to the diagnosis was the localised distribution of the pain. In consideration of lower abdominal pain typhoid must not be forgotten.

Mr. PHILIP WRIGLEY pointed out that pain in the lower abdomen might be due to an extra-abdominal lesion affecting the eleventh and twelfth dorsal and first lumbar nerves in any part of their course, and instanced a case of perinephritis, in which for a considerable time the dominating symptoms were pain in the right iliac fossa and agonising pain in front of the knee. The character of the pain, and whether it remained localised or radiated, or partook of the nature of renal, biliary, or intestinal colic, was often of value in determining its cause. Mr. Wrigley uttered a warning against appendicectomy without careful investigation, and emphasised the fact that the cause of pain in the right iliac fossa was often to be found in the left iliac fossa, being due to distension of cæcum secondary to obstruction in the sigmoid colon from carcinoma or diverticulitis. He was not convinced that visceroptosis was in itself a cause of abdominal pain and believed that the symptom was due to some associated condition such as infection or constipation or to some independent affection.

ROYAL ACADEMY OF MEDICINE IN IRELAND.

SECTION OF OBSTETRICS.

A MEETING of this Section was held on Jan. 9th with the President, Dr. A. H. DAVIDSON, in the chair.

Dr. D. J. CANNON read notes on a severe case of

Ruptured Ectopic Pregnancy.

The patient, 36 years old, had had several children, and one miscarriage. She was pale, her pulse was just perceptible, and she was very restless. There was a history of a missed period; the lower abdomen was rigid, and there was dullness on percussion. The patient was given morphine and was removed at once to a nursing-home. On admission she was collapsed. She had no pulse. The restlessness had disappeared and she was suffering from profound shock. Operation was deferred, but no signs of reaction appeared for at least four hours after admission. She was then operated upon under gas-oxygen and blood was given by transfusion. She made an excellent recovery.

Dr. Cannon thought that, with rare exceptions, fulminating cases of ruptured ectopic pregnancy should be operated upon as soon as possible. This case was one of the exceptions. To have operated upon her before she showed signs of recovery would probably have been fatal.

The PRESIDENT agreed that operation should sometimes be deferred. It was most important that as soon as the operation began, intravenous saline should be given, and that this should not be put off until the operation was over. Gum saline during operation was invaluable.

Dr. BETHEL SOLOMONS said it was illogical to allow a woman to go on bleeding, and operation should only be deferred until the theatre was ready; during this interval submammary saline was given, and morphine. If the patient lived far away from hospital, the operation should be performed where she lived, for the danger of removal was great; but if she lived near a hospital and was in bad surroundings she could be removed quietly and gently. He did not believe in delay during the operation to search for clots; obvious clots should be removed, the abdomen should be filled with saline, and the patient brought quietly to bed and given restoratives. Transfusion of blood was unnecessary and usually unpractical, but he had never seen submammary saline fail. Dr. Solomons reported several cases showing that the cardinal symptoms of ruptured ectopic gestation could not be relied on.

Dr. J. S. QUIN said he had seen many cases of ruptured ectopic pregnancy, in the acute and the subacute stage, which had recovered, but he could not remember any which compared with that described by Dr. Cannon as being of the fulminating type. He thought that in extremely acute cases operation should be deferred, and wondered if it would not have been better in Dr. Cannon's case to apply restorative methods in the patient's home at first, and not to have moved her to a nursing-home until the preparations for operation were complete. He thought that the extremely serious condition of such patients was due to intraperitoneal shock, and not to the hæmorrhage. Gas-oxygen was the ideal anæsthetic; ether stimulated the patients for an hour or so after operation, but then they were likely to relapse. If blood transfusion was carried out, the

patient was restored to normal health in a few weeks instead of a few months.

Dr. D. G. MADILL said if a patient was really bad, it was advisable to wait a couple of hours before operating and resuscitate her as much as possible. He had operated with gas-oxygen anæsthesia and with open ether, and had got good results with both. Before closing the abdomen, the peritoneal cavity should be filled as full as possible with saline, so that the saline bubbled out when the wound was being stitched. If this was done, the patient did not require transfusion.

Prof. J. S. ENGLISH maintained that operation should be done as soon as possible in these cases. He gave a small dose of morphia, waited for 20 minutes or so until it had had time to take effect and relieve the shock to a certain extent, and then operated. He always pumped the blood out of the abdomen, and then put it back into the patient's veins. He had always had good results, and never a fatal case. In a few cases there had been a slight rise of temperature, but it had subsided quickly.

Dr. J. F. CUNNINGHAM referred to the difference between a state of shock and a state of collapse, and said it was hard to tell whether a rapid pulse-rate was due to shock or collapse. He thought the abdomen should be immediately cleared of blood and the peritoneal cavity filled with saline.

Dr. JOHN MCGRATH, referring to the injection of blood from the abdomen into the patient's veins, said that if hæmolysis occurred in the blood as it must to a certain extent occur in the peritoneal cavity, he thought it would sometimes be extremely dangerous to reinject the blood.

Dr. CANNON in replying said that the agents he employed for the resuscitation of his patient were morphia, heat, and submammary saline. In most cases he thought immediate operation was necessary, but he had no doubt that there were some in which it was wiser to defer operation.

Dr. Cannon showed a specimen from a case of metropathia hæmorrhagica, and Dr. C. J. SHORTALL showed a double monster.

REVIEWS AND NOTICES OF BOOKS

Recent Advances in the Study of Rheumatism.

By FREDERICK JOHN POYNTON, M.D., F.R.C.P. Lond., Physician, University College Hospital; Senior Physician, Hospital for Sick Children, Great Ormond-street; and BERNARD SCHLESINGER, M.A., M.D. Camb., M.R.C.P. Lond., Physician to the Children's Department, Royal Northern Hospital; Physician to Out-patients, Hospital for Sick Children, Great Ormond-street. London: J. and A. Churchill. 1931. Pp. 313. 12*s*. 6*d*.

THE ever-increasing interest in the subject of rheumatism in all its forms has produced such a mass of literature that to keep pace with it is beyond average powers. This addition to the Recent Advances series is, therefore, welcome. The authors have fairly and impartially summarised, discussed, and criticised all the work of value which has been published during the last few years. No author can complain that his contribution to this subject is unfairly reported or boiled down to such an extent as to make the presentation valueless. Each theory or treatment is allotted reasonable space in the book, and then discussed from all points of view. The vexed question of nomenclature is first considered, and some of the better-known classifications given; the authors' suggestion that they all tend to lose sight of the general constitutional disturbances that may occur in addition to the arthritic, muscular, and neurotic manifestations is worthy of consideration. The chapter on predisposing causes is of particular interest. In dealing with the importance of damp as an ætiological factor, the authors emphasise the necessity of preventing the sacrifice of the health of the citizen to the interests of successful speculators in the building trade.

The earlier part of the book is mostly devoted to rheumatism in childhood, in which both authors have had wide experience. The bacterial theory of origin is, of course, favoured, but the balance of evidence in its favour is not unduly stressed. In the section on the morbid anatomy of acute rheumatism the fact that lesions have been described in the pulmonary artery and in the vascular system throughout the body is quoted in support of the argument that rheumatism is a widespread disease, more especially in the vascular system; lesions have, however, also been described in other structures as, for example, the synovial membrane of joints. A chapter is allotted to electrocardiography in acute rheumatism. This branch of investigation has only comparatively recently received special study; it is now possible to confirm the presence of early and transient myocardial changes, suspected but hitherto unproven. The methods of long convalescence used in this country and in America are clearly described; this prolonged rest is probably the most valuable form of treatment we have at the moment, more especially for early and slight cases.

The second part of the book deals with rheumatoid and osteo-arthritis. Here again a very complete summary is given of all recent work. We would have welcomed a little more detail on the subject of the biochemistry of the condition, as far as it has advanced, in order to clear away the mists of tradition. Much loose talk has been allowed in connexion with this aspect of the disease, as, for example, the use of the much abused term "acidity." It seems now well established that the pH of the blood is unaltered in rheumatism, and that therefore all diets directed towards alteration of the reaction of the blood would appear valueless.

Examples illustrating the interest and value of this book could be multiplied indefinitely. We commend it to every one of our readers, for rheumatism, from one point of view or another, is of interest to medical men in every specialty, as well as to those in general or consulting practice.

Anleitung zur Diathermie behandlung.

Third edition. By Dr. G. BUCKY. Berlin: Urban and Schwarzenberg. Pp. 224. R.M. 10.50.

THE third edition of this book differs but little from the second. A short section deals with the nature and properties of the diathermy current, the distribution of the heat generated in various conductors and regions of the body, and the main biological changes brought about by diathermy. The major portion of the book deals with the practical

side of diathermotherapy. Various electrodes are described, and details are given in regard to their application to different regions of the body. Under the headings of the respiratory, circulatory, urogenital, and other systems the author names the diseases which can be usefully treated by diathermy; these diseases are stated in alphabetical order, and under each one he summarises the action of the treatment, its results, its method of application, and its duration and frequency. There is a short section on surgical diathermy and a note on the cutting current.

Numbers of simple drawings represent the sites of application of the electrodes when the different regions and organs of the body are subjected to diathermy. These are very helpful. Among the new illustrations is one (Fig. 78) depicting an electrode, of English make, containing a thermometer, and designed for subjecting the cervix uteri to diathermy. Another (Fig. 123) illustrates an ingenious method of applying diathermy to the toes and anterior part of the foot. The foot is placed in water in a shallow tray, and the tray is then sloped so that the water covers only the parts requiring the treatment. A metal plate is placed at the bottom of the tray under the front of the foot. This is connected to one of the terminals of the machine, and the circuit is completed by means of a belt electrode around the calf.

Dr. Bucky's book will be a useful guide for those who are interested in the practical side of diathermotherapy. There is a very complete bibliographical index.

Trial of Harold Greenwood.

Edited by WINIFRED DUKE. London: W. Hodge and Co. 1930. Pp. 347. 10*s*. 6*d*.

Harold Greenwood's trial in 1920 had several points in common with that of Herbert Armstrong some months later. Each was a country solicitor in the South Wales district; each was charged with murdering his wife; each was well supplied with weed-killer, and in each case the wife's body, exhumed some ten months after burial, was found to contain arsenic. Armstrong was convicted and hanged; Greenwood was acquitted. Mrs. Greenwood died in June; her husband's second marriage in October encouraged the suspicions. There was not the usual motive for such haste, nor was there any overwhelming motive for murder. The Crown failed to establish any positive and consistent theory. Its case was that Greenwood gave his wife arsenic in a glass of burgundy. His daughter, giving evidence for the first time as the final witness at the trial, swore she drank wine from the same bottle both at lunch and at supper on the critical day. The prosecution could still suggest to the jury that the arsenic could equally well have been given in tea, brandy, or medicine, but the initial Crown case was shaken. On the other hand the defence, too, was taken by surprise. Mrs. Greenwood's medical attendant (hardly so vigilant as the medical attendant of Mrs. Armstrong proved himself) had stated both at the inquest and before the magistrates that he gave Mrs. Greenwood two morphia pills of gr. ½ each. The defence came to the trial prepared to show that this was a dangerous dose sufficient to account for death. At the trial the doctor explained that when he had said morphia he meant opium; he declared that what he really prescribed was "Pill Opii. ½ grain." There was a legal surprise also. Senior counsel for the Crown, in commenting on the fact that Greenwood's second wife had not given evidence, entirely overlooked the statutory prohibition against such comment in Section 1 of the Criminal Evidence Act, 1898. The error was quickly corrected, but more might have been heard of it in the Court of Criminal Appeal had Greenwood been convicted. The Home Office experts' evidence of the arsenical poisoning was interesting in view of the small amount (gr. 0·275) found in the body. The defence, while denying that the amount was consistent with a fatal dose, suggested it might have been inhaled when walking in a garden where weed-killer had been used. Another bold suggestion was that the medical practitioner, when he gave Mrs. Greenwood a bismuth mixture from a stock bottle in his surgery as a gastric sedative to allay her vomiting, had in error used the wrong bottle, and supplied her with Fowler's solution of arsenic.

The editor's informative introduction to this new volume in the "Notable British Trials" series, tells us that Greenwood died two years ago in a Herefordshire village where he had been living under another name. His action against Madame Tussaud's, for exhibiting him in effigy, recalls that of Morison in 1894, which with similar cases is mentioned in an interesting exposition of the law of personal privacy in the current *Law Quarterly Review*.

Interpretation of Development and Heredity: A Study in Biological Method.

By E. S. RUSSELL, M.A., D.Sc. Oxford: Clarendon Press. 1930. Pp. 312. 15*s*.

Dr. Russell, who is in charge of the research work of the Ministry of Fisheries at Lowestoft and elsewhere, has written a solid scholarly and withal very readable treatise on the theory of development and inheritance. As in *Form and Function* (1916) his discussion is based mainly on an historical account of the growth of knowledge and ideas on the subject, in which he brings out clearly the importance of considering carefully what Aristotle had to say about it, and reminds us that the great majority of serious students of the matter have found themselves unable to subscribe to a mechanistic interpretation. He argues strongly for an organismal outlook, that is for an integrative rather than an analytical point of view, and his incisive criticism of particulate theories of inheritance in general and of the gene theory in particular will interest many people in these Mendelian days. The criticism is timely, though perhaps Dr. Russell does not distinguish quite clearly between genes as causes and genes as mechanisms; Mendelists are apt to make a complete confusion between the two. Broadly speaking, Dr. Russell's conclusion is that we cannot go further at present than to say that a cat's egg develops into a cat because it is a cat's egg; he is content to wait for further knowledge. Many people will feel that they need some more definite framework for their thoughts. But biologists of all mental complexions certainly ought to read the book.

An Introduction to Surface Chemistry.

Second edition. By ERIC K. RIDEAL, M.A., Ph.D. Cambridge: At the University Press. 1930. Pp. 459. 21*s*.

THE science of surfaces is fundamental and far-reaching. In this basic study the adsorption and electrical phenomena at the four types of interface are discussed with minimal practical details, the

author reviewing the theories of surface chemistry and the evidence on which they are founded. Few people have greater facility for the collection and correlation of the diverse data germane to this subject than Prof. Rideal, and if his book is not easy to read it is because he has succeeded in compressing much information into little space.

In the four years that have passed since the publication of the first edition perhaps the most revolutionary observations have been those on the mobility of atoms adsorbed on solid surfaces. The evidence from molecular rays has received confirmation from Volmer, who showed the migration of benzophenone molecules across a glass surface. Still more recently a very beautiful demonstration has been given by Becker; this involves a new weapon, thermionic emission, whose value is made evident in many places in this book. Refinement of apparatus has led to a greater insight into the phases of insoluble films on liquid surfaces, and protein films have been studied lately by Gorter and Grendel. The direct measurement of the electric moments of the molecules in these films, now achieved, opens up great possibilities. At the liquid-solid interface the dependence of adsorption on the reaction of the solution has also been studied. Prof. Rideal has, unfortunately, not made many significant alterations in the chapters on the conditions of stability in suspensions and emulsions and on gels and hydrated colloids. He has thus been unable to insert the very latest work on the adsorption by silica gel. The chapter on differences of potential at interfaces has been almost entirely rewritten; a full discussion of the new electrical theories of adsorption is given, and in view of the immense biological importance of the subject his critical account of the permeability of membranes will be welcomed.

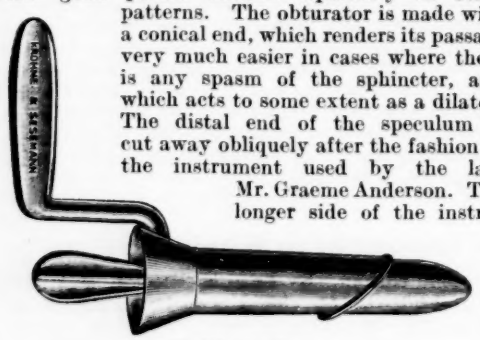
NEW INVENTIONS

A RECTAL SPECULUM AND A STANDARD LAMP.

THE two instruments described below have been made in accordance with my design, and I have found each of them of very material assistance in the treatment of hæmorrhoids by submucous injections with carbolic oil.

THE RECTAL SPECULUM.

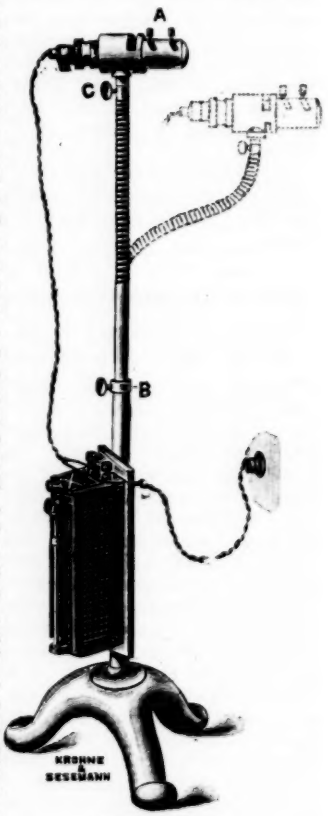
The rectal speculum combines in one instrument several good points utilised separately in other patterns. The obturator is made with a conical end, which renders its passage very much easier in cases where there is any spasm of the sphincter, and which acts to some extent as a dilator. The distal end of the speculum is cut away obliquely after the fashion of the instrument used by the late Mr. Graeme Anderson. The longer side of the instrument from its shoulder to the distal end measures 3½ inches and the shorter side 2½ inches. Using my special syringe, the shaft of whose needle is 4½ inches in length, it is possible to inject under the mucous membrane of the rectum as far up as is necessary. The cut-away end of the instrument facilitates bringing into view the part of the mucous membrane or of the hæmorrhoid that it is desired to inject, the longer side of the instrument keeping other parts out of the way like a retractor. A special point is the shape of the handle. This makes it possible to rotate the instrument in situ round a complete circle, because it is so designed that the horizontal part of the handle stands out clear of the buttocks and does not catch on them as does the ordinary straight handle. This is a much simpler arrangement than the movable collar, suggested by the late Dr. Whitcombe with a similar object.



Rectal speculum.

THE STANDARD LAMP.

The standard lamp affords a powerful light for the illumination of the interior of the rectum through any form of speculum. Formerly, I used a forehead lamp, but there are obvious disadvantages in being tethered by the cable of such an instrument. The lamp illustrated is arranged on a stand with a heavy base. The upright carries a rheostat, which makes it possible to use the lamp from mains of any voltage. The upper half of the upright is flexible so that it can be moved in all directions and to any angle. The lamp may be raised and lowered still further, if required, by pulling out the flexible portion from the rigid lower part after loosening the thumb-screw (B). The lamp itself is fixed on to the top of the column by a hinged collar (C), so that it can be tilted again at this point through an angle of nearly 180°. The lamp is of the Vesta pattern. It is provided with two powerful movable lenses (A), by means of which the focus can be varied at will. It provides a very intense circle of light, the diameter of which can be varied by moving it nearer or farther from the field of operation. I have found it of the greatest assistance in rectal work. It can also be used for laryngoscopic or ophthalmoscopic work and for microscopy.



Standard lamp.

Messrs. Krohne and Sesemann, Duke-street, Manchester-square, London, W., are the manufacturers of both these instruments.

ARTHUR S. MORLEY, F.R.C.S. Eng.

THE LANCET.

LONDON: SATURDAY, FEBRUARY 21, 1931.

BIOLOGY AND STATECRAFT.

THERE can be no proper government of this or any other country, there can be no sound statecraft, that does not take full account of the science of living things and act under its guidance. This is the thesis developed by Sir WALTER FLETCHER in a lecture broadcast on Jan. 23rd and subsequently published in *The Listener* (Jan. 28th, p. 127). It is true, as he says, that all recorded human history might be written in terms of the progressive development among the races of man of the arts of hunting and the arts of agriculture. The multiplication of races, their migrations over the earth's surface and across the seas, their success in warfare can all be traced in terms of the discovery by man of new ways of using animal and vegetable life for his own purposes, and in terms of the competition among races to get the benefit of these discoveries for themselves. But this progress has not, he points out, been evenly distributed through the period of civilisation. In the last three centuries our gains in biological knowledge have far exceeded the gains made in the previous 3000, or indeed 30,000 years, and of this sudden speeding-up of discovery the greater part has been even more recent, and falls almost within the memory of men now alive. Sir WALTER FLETCHER attributes this spurt to the invention of the microscope and to the widespread use of experiment to supplement observation. We would add another factor which he notes, at least by implication, in the later part of this masterly survey—that a greater proportion of the educated population have enough early training in the rudiments of science and scientific method to act at least as routine workers under expert guidance. The coöperation of trained assistants is essential to the pursuit of experimental biological research on a large scale, especially in agricultural or entomological field work.

Cogent examples of the contribution which a more biological outlook could make to imperial problems are adduced to show that of all nations of the world none has so great a need as England of bringing biology into her statecraft. By greater encouragement of the application within the Empire of what is already known of entomology and genetics, and of facilities for further study of these branches of science, much waste and poverty could be eliminated everywhere; and the argument becomes even more forcible when applied to the special needs of India at the present time. Sir WALTER FLETCHER draws a happy picture of the developmental circumstance, which though insects remain the most destructive enemies and rivals of man, has given us the advantage over them in size and brain so that we could, if we tried hard enough, learn to control the ravages they inflict. They have followed in their family descent a faulty engineering model, the converse of the vertebrate plan; they kept their soft parts inside and put their hard skeletons on the outside. This, from mechanical and chemical reasons, has imprisoned them within small limits of possible size. But we have turned our guts about and always wear them inside out; and in so doing have become the masters of our fate. Otherwise the insects might now be the Lords of Creation and our own dim ancestors a series of forgotten fossil forms. They are potent enough in present conditions. Official figures show that in India alone, the loss of crops, of timber, and of animal products by insect damage is estimated at over £150,000,000 annually, and the death-roll due to insect-borne disease at over a million and a half lives. Canada in field and fruit crops and in timber loses 30 million sterling annually, Australia loses 20 millions. In our African Colonies and Protectorates the loss is only partly calculable, because vast areas in Africa are in effect made desert and idle because of the tsetse-fly alone. If human enemies were destroying our lives and property in that degree, or to one-thousandth part of it, the whole nation would be mobilised to fight them. But against the insects we have organised no army worth the name, and we have no policy of recruiting. The youths in our schools and universities are almost wholly unaware either that this imperial need exists, or that they could find any interest and profit in serving it, either by research work or in scientific administration. In connexion with genetics, Sir WALTER FLETCHER shows what has already been done in producing wheat not susceptible to rust, a new barley with a higher yield per acre, a better banana crop, and an improved harvest of sugar cane. But public money and public encouragement are lacking or at any rate are inadequate to the needs.

The reasons for this indifference among governments in the past Sir WALTER FLETCHER traces ultimately to the effects of the exclusively classical or literary education of statesmen. With India as his text, he has been able deal some shrewd blows at the lack of perception of the biological issues involved in government shown by administrations throughout the world. In the past a purely classical training was an educational background accepted without question as adequate for the administrators of large territories. There is now a growing body of opinion, which has seldom been voiced more effectively than in this lecture, that in the modern world a statesman without at least an elementary knowledge of the means by which natural knowledge has been gained, can be used, and can be increased is as deficient as if he were illiterate.

TREATMENT OF FRONTAL SINUSITIS.

Two main reasons account for the difficulty of treating suppuration in the frontal sinuses: first, the sinus is situated in the forehead, where extensive operation produces disfigurement, and

secondly, it opens into the nose by a long narrow and tortuous canal surrounded by the anterior ethmoidal cells, usually, if not always, similarly infected. The sinus itself is a broad but relatively shallow cavity, lined by a mucous membrane capable of remarkable swelling, and its adequate drainage is difficult. At one time, indeed, it was believed impossible and the only method of cure employed in inveterate cases was complete obliteration of the cavity by removal of its anterior and inferior walls; this, however, except in the case of a very small sinus, produces distressing disfigurement of the face, and it does not always give complete cure, because that part of the cavity near the ostium cannot be entirely obliterated. With a view to minimising the deformity KILLIAN introduced his well-known method of leaving a bridge of bone along the supra-orbital margin; but this leaves a larger dead space beneath the "bridge" where suppuration may continue; the disfigurement is still considerable, and the bridge occasionally necroses. Many surgeons, therefore, have concentrated their attention on providing adequate drainage into the nose, and they have shown that such drainage is, in fact, possible, and that the mucosa of the frontal sinus subsequently tends to recover; in long-standing cases complete cessation of discharge is not often obtained, but it is usually much reduced, and pain and other symptoms are relieved.

The passage from the frontal sinus into the nose varies very greatly in anatomical disposition; it is often narrowed and bent by the projection into its lumen of one or more of the anterior ethmoidal cells, particularly the anterior group lying beneath the agger nasi, to which attention was directed by MOSHER. It is generally agreed that these cells usually participate in suppuration of the frontal sinus, and that they must be exenterated, both to secure an adequate opening and to prevent reinfection of the sinus, if the result is to be satisfactory. This may often be done by intranasal methods, with or without actual enlargement of the ostium; most rhinologists agree that a large proportion of cases can be cured by such means and, indeed, that recent and acute cases will usually recover under simple treatment such as inhalations, or after removal of the anterior attachment of the middle turbinal; but this form of treatment was only touched on lightly at the meeting we report on p. 410. One important technical advance, which was introduced by KILLIAN, is to prolong the supra-orbital incision down the side of the nose and to remove a large part of the nasal process of the superior maxilla. This procedure gives excellent exposure of the frontonasal canal and makes it easy to remove the anterior ethmoidal cells, and, if necessary, all the cells back to the sphenoid; it forms an essential part of the operation described by Mr. W. G. HOWARTH, who also removes a large part of the os planum of the ethmoid. Other rhinologists do not think it necessary to remove the os planum, and dispense with the rubber drainage-tube which Mr. HOWARTH retains for ten days. In some cases the new frontonasal duct tends to contract, which has induced Mr. V. E. NEGUS to employ skin-grafts. The ingenious method of Mr. DOUGLAS HARMER and Mr. BEDFORD RUSSELL to dilate the duct by soft rubber catheters recalls the metal style used by Mr. LAMBERT LACK over 30 years ago, but is much more refined in technique, and seeks to dilate so gradually that the mucosa of the canal is undamaged. Its chief disadvantage is that the treatment must often be prolonged over many months, during which the small wound in the forehead remains open, and that the resulting scar is in consequence rather conspicuous. The method, of course, takes no account of concomitant disease of the ethmoidal cells.

Although the report by Dr. J. S. FRASER and Dr. J. P. STEWART shows a large proportion of cases operated on by complete obliteration, a general tendency towards a less extensive type of operation was manifested at the meeting. The discussion made it clear that the problem of the treatment of these difficult cases is not yet finally solved.

CEREBRO-SPINAL FEVER.

THE seasonal rise of prevalence of cerebro-spinal fever has been attended this winter with serious local outbreaks in the West Riding of Yorkshire and at two military camps in the South of England. This renders it opportune to remind ourselves of the main features of the disease and to recall what was learned from the epidemics that occurred during the years of the late war. Cerebro-spinal fever is essentially a disease of winter and spring. The majority of recorded epidemics have begun during one of the four months, December, January, February, and March, the maximum intensity of the outbreak being reached in April or May; by the end of July the epidemic is over. A relatively small proportion of any community contracts the fever and statistics show that direct spread from one patient to another is unusual. Further, only a small percentage of those exposed to the risk of infection develops the disease, although they may become carriers of the meningococcus in the nasopharynx. Investigations in the Woolwich military district during the war showed that about 10 per cent. of individuals coming into contact with cases of the disease became carriers, while among non-contacts—that is, the general population—the carrier-rate was only 1·86 per cent. Bearing in mind the fact that the meningococcus can be obtained from the nasopharynx of practically all cases of cerebro-spinal fever during the first week of illness and from the preceding observations, it is clear that the secretions of the nasopharynx of both cases of the disease and of carriers are infective and by such secretions the organism may be transmitted to those with whom cases or carriers are in proximity. Individuals who thus acquire the organism may develop the disease or, as most frequently occurs, they may merely harbour it in the nasopharynx for a varying length of time and so be capable of transmitting the disease to others. At the present time the bulk of evidence is in favour of the spread of the organism from nasopharynx to nasopharynx inside houses, schools,

theatres, and wherever large numbers of people congregate together. The influence of overcrowding and unhygienic surroundings in determining the number of positive contacts has been abundantly proved. Among predisposing causes of the disease are sudden and marked variations in temperature to which a particular community is unaccustomed; overcrowding and deficient ventilation; fatigue and the presence of catarrhal conditions affecting the nose and throat, while mobilised troops, especially recruits, and children living in populous cities are particularly susceptible to the disease. Since the meningococcus rapidly perishes when exposed to temperatures lower than 22° C. (71·6° F.), air-borne infection can only take place in a very warm atmosphere. The tendency for people during the colder weather to collect in overheated rooms with natural ventilation shut off certainly provides conditions under which such infection may occur.

The ideal procedure to be adopted on the occurrence of a case of cerebro-spinal fever would appear to be as follows. The patient should at once be removed to an isolation hospital or special ward and as far as possible the contacts of the case should be segregated and swabs taken from the nasopharynx of each to ascertain the presence or otherwise of the meningococcus. By the term "contacts" is meant those individuals living in the same house, taking meals or working in the same room as the patient at the time of and during the week preceding his developing the disease. In civil practice, apart from institutions, it is usually impracticable to segregate all contacts and keep them isolated until the results of the post-nasal swabs are known; one has usually to be content merely with swabbing the nasopharynx of each of the contacts and awaiting the result. A period of quarantine as a preventive measure is in itself quite useless, since some carriers are known to harbour the meningococcus for as long a period as three months; effectual control can only be guaranteed by the production of bacteriological proof that the nasopharynx of contacts is quite free from the organism. When definite carriers are identified, they should be kept in isolation and treated until the nasopharynx is free from meningococci as indicated by not less than two successive swabs, taken at intervals of several days, yielding a negative result. Considerable difference of opinion has existed as to the precise value or otherwise of treatment applied locally to the nasopharynx for the disinfection of carriers. The meningococcus however, being one of the least resistant to disinfectants of all pathogenic organisms, is rapidly killed by some of the mildest antiseptics in a concentration easily tolerated by the mucous membrane of the nasopharynx. Theoretically, therefore, the organism should be destroyed in the nasopharynx with comparative ease provided it were reached by a suitable disinfectant. Strong antiseptics may be positively harmful, as, by injuring the delicate mucous membrane, they may set up inflammatory trouble and thereby render the meningococcus more difficult to eliminate. In the Woolwich military district the substance known as chloramine T (sodium toluene-para-sulphochloramide) was found a suitable disinfectant and was used with considerable success. Possessing pronounced germicidal properties, chloramine T does not cause precipitation or coagula in secretions or exudates, a fact that renders it of value for acting on micro-organisms contained in such fluids. A 1 per cent. solution of chloramine T is used, the carrier being directed to sniff the liquid from the palm of the hand into the nose and return it through the mouth. This procedure is repeated several times each morning and evening, the course of treatment lasting three or four days and being repeated if necessary. During fine and warm weather, carriers tend to rid themselves of the meningococcus more rapidly.

The onset of cerebro-spinal fever may be sudden and abrupt or, less frequently, gradual. The patient complains of sudden chilliness or rigors and these symptoms are succeeded by severe headache, loss of appetite, and vomiting. Early diagnosis is of paramount importance, since the earlier treatment is begun, the better is the prognosis. The great importance of early treatment cannot be sufficiently shown by statistics because in every considerable number of cases there must occur some of a fulminating type which prove fatal within 12 to 48 hours, treatment having little or no effect. The chief and characteristic diagnostic signs are: (1) a sudden onset in a patient previously well or complaining only of a cold, with rigors, increasingly severe headache, and vomiting; (2) early delirium or stupor in a pyrexial patient; (3) some degree of rigidity of the posterior muscles of the neck; (4) Kernig's sign; (5) in infants, tension and bulging of the anterior fontanelle. Secondary signs of value when present are: (*a*) a petechial or purpuric rash; (*b*) retention of urine; (*c*) a state of irritable stupor with active withdrawal of the leg on plantar stimulation; (*d*) comparatively slow pulse-rate with high temperature. The experiences of 1914–18 showed quite definitely that the most efficacious form of treatment was the application of a reliable immune and polyvalent serum injected intrathecally at the earliest possible moment after drainage of the subarachnoid space by lumbar puncture. The initial dose of anti-meningococcal serum should be not less than 30 c.cm.; this amount is then administered daily until clinical improvement is definite and undeniable, and until meningococci have disappeared from the cerebro-spinal fluid. A disquieting feature of the present epidemic is that recently serum treatment appears to have been of little avail and the mortality has been exceptionally high. Experience during the war showed that therapeutic serum varied remarkably in potency, and that while the best sera reduced the case mortality to under 20 per cent., many were apparently useless. The serum treatment of the disease in Denmark in recent years has given such poor results that it has been discontinued, and medical opinion is not favourable to it in Sweden.[1] In Roumania, on the contrary, whilst the mortality of the cases treated by other methods

[1] Bulletin of the Office International d'Hygiène Publique, 1930, xxii., 2.

amounted to 65 per cent., that of a recent series of 101 cases treated by serotherapy was 18·3 per cent. and (omitting cases which were comatose on arrival or died a day or two after admission to hospital) 10·9 per cent., figures which compare favourably with the best results of univalent type 1 serum prepared in the Medical Research Council's laboratories in 1918. French experience is stated to be strongly in favour of serum treatment. The manufacture of potent antimeningococcal serum is a process of great difficulty and uncertainty; sera prepared by the use of strains of the meningococci prevalent in one epidemic may be of no value when used in an epidemic some years later. Even successive batches issued by the same laboratory vary remarkably in value. M. H. GORDON is of the opinion that the power of neutralising the endotoxin of the meningococcus is probably the best laboratory index of therapeutic potency, since a serum may possess high agglutinin and opsonin content and yet have no therapeutic potency. The preparation of new sera from strains isolated in the present epidemic is an urgent necessity, which is fully realised by the bacteriologists engaged in this work. The present epidemic as far as the types have been determined is, like the Glasgow epidemic of 1929, predominantly due to type 1. It will be remembered that the war-time epidemic was predominantly type 1 in its earlier phases, later type 2 became the more common, and then in 1918 type 1 again became the prevalent strain. Unless and until a potent serum is available, early drainage by lumbar puncture, which should be repeated daily for four or five days, is probably the most effective treatment.

With regard to the prophylaxis, careful observation of the general rules of personal hygiene is the best safeguard against contracting the disease. The nearest approach to open-air life should be followed, crowded assemblies should be avoided as far as practicable, and no excessive fatigue should be incurred. One of the most important centres of infection in the Glasgow epidemic was a crowded and ill-ventilated recreation room for youths, 10 cases, several fulminant, being probably thus infected. In selected communities such as schools, hospitals, and barracks the distance between beds should be increased to the utmost possible: a distance of 3 ft. clear between the edges of adjacent beds being regarded as the minimum for healthy persons, whilst in wards, especially those in which influenza patients are being nursed, the interval should be at least 6 ft. and preferably 8 ft. The importance of making effort to prevent the spread of all catarrhal diseases by special precaution in coughing and sneezing, so as to avoid scattering infectious droplets, is again emphasised in connexion with this disease.

ANNOTATIONS

THE CHILD FROM SEVEN TO ELEVEN.

THE report just issued by the consultative committee appointed by the Board of Education[1] to inquire into the courses of study suited to children from age 7 to age 11 in elementary schools, like its predecessor dealing with children over 11, evinces a modern and scientific outlook on the problems presented. Unlike the education of the past which aimed at leading the child along educational channels theoretically determined, that of the present aims at fitting education to the needs of the child, aiding them to be "vigorous in body and lively in mind" in preparation for the more serious demands which later life will make upon them. A study of the mental and physical conditions of children within the age limits prescribed was regarded, therefore, as a fundamental pre-requisite for any rationally based conclusions, and it is no disparagement of the rest of the report to say that its most vital chapters are the two appendices dealing with these conditions: that on physical development contributed by Dr. H. A. Harris, assistant professor of anatomy at University College, London, that on mental development by Prof. Cyril Burt, psychologist to the London County Council. Both writers have to admit that the years of the child's life in question have not yet been adequately studied—Dr. Burt calls them the "dark ages" of childhood—and they both deprecate educational methods which are based upon inaccurate traditional notions regarding this period. Infancy and adolescence have monopolised attention, it is held, too exclusively. Nevertheless a fair amount of knowledge, even if somewhat disjointed, has been accumulated on both the mental and physical conditions of the period.

Dr. Harris distinguishes six periods of growth between birth and adolescence, three "springing-up" periods, the first year, the years 5 to 7, and the years of puberty, alternating with three "filling-out" periods, 1 to 5, 7 to 11, and the years of adolescence. The years under consideration are those of the second "filling-out" period, and from the medical and educational standpoints their significance, he contends, lies in the fact that at this time the child "presents in varying degrees the sequelæ of the acute infections" of the younger years. It is a period burdened with a heritage of past diseases and deficiencies, manifested in faulty dentition, defects of vision, middle-ear disease, enlarged tonsils and adenoids, and diseases of lymphatic glands. These four years provide opportunity to remedy these past errors and to prepare the child for the demands that the next "springing-up" period of puberty will make upon him, and the last opportunity, in school at least, to raise the norm of physical efficiency. It is a period therefore for which special responsibility rests upon the school medical service, the second of whose routine inspections falls within it. Anthropological measurements give a totally inadequate conception of growth. Different tissues and organs grow at different rates and cease growth at different ages. Growth rate at any moment is the resultant of a considerable number of growth rates, each of which may be affected in different degrees by diseased conditions. Dr. Harris reminds us that growth is not a mere matter of proliferation of existing cells, but involves also cellular differentiation of function. He quotes Scammon's four types of growth, skeletal, neural, lymphoid, and genital, each with its own rate and maximal periods; but even these

[1] The Primary School. H.M. Stationery Office. Pp. 290. 2*s*. 6*d*.

do not cover the complexity of growth. In the matter of sex differences, it is interesting to note that the bony signs which herald the cessation of growth start at an earlier age in girls than in boys, and that the female brain is remarkably precocious although its growth does not persist so long. "Sexual differences are as complicated at 10 years of age as at 14." Skeletal, osseous, and endocrine systems develop differently in boys and girls throughout childhood and there is no basis for coeducation from age 7 to 11 on the ground that sex differences are insignificant then. A section on types of body-build leads to the conclusion that all are consistent with good health and efficiency and that there are marked limits to any attempt to alter the build. Bodily habitus may have much to do with the determination of mental characteristics, but the anatomical basis for psychology is still to discover. Definite knowledge even of the relation between mental variations in individuals and histological brain variations is still very imperfect, apart from the study of cases of marked amentia or dementia. Dr. Harris gives an outline of the work that has been done towards achieving an index of the relative proportions of body and brain in animals and man, and points out the significance of Anthony and Coupin's "Index of Cerebral Value," which expresses the relation between actual brain weight and calculated brain weight, this last being "the brain weight of the adult if said adult were reduced to the size of the young individual in question." This index is at a maximum about the seventh year, the second springing-up period, and there would appear to be some relation between this fact and the marked alteration of mental activity noted to occur about this time by educators so observant as Froebel and Montessori. Dr. Harris concludes with a warning of the necessity for care of the muscular system during the period under review, because, although its chief developments fall outside the period, it is very sensitive, on the one hand, to illness and malnutrition, and on the other, to feeding and exercise. His plea for a sufficiency of sleep will be generally accepted by the medical profession. Excessive homework, social claims, compulsory sports, the cinema, the loud speaker "present an accumulation of physical and intellectual exigencies" which interfere seriously with sleep, and which cannot be counterbalanced by vitamins and artificial sunlight.

Dr. Burt sets out how the power of sustained attention increases rapidly during the period considered: mental fatigue is more apparent than real, being chiefly physical; memory, at first mechanical, becomes at 9 more logical and should be encouraged in this development; imagery is largely concrete and visual throughout the period; reasoning in the form of perception of simple relations of space, quantity, similarity, and contrast is present even at 7; extreme susceptibility to suggestion is a marked feature. Interests between 7 and 13 years become less personal, more objective and specialised, but the one marked interest of this period is that of making things, while the special feature of play at this time is that, while the child is less individualistic, he cannot be said as yet to play with others, but rather against them. The primary object of these two sections of the report was no doubt to give a basis for educational recommendations to the committee, but apart from that special object, they are full of interest and suggestion to the practitioner and the school medical officer, whose daily work it is to guide and control so far as possible the growth, nutrition, and activities of children.

ELECTRO-SURGERY IN VISCERAL OPERATIONS.

More and more attention is nowadays paid by surgeons to the "cutting current" and some experiments have lately been done by H. E. Pearse and G. E. Ward [1] to ascertain the hæmostatic power of these currents in operations on highly vascular organs such as the kidney, liver, and spleen. The experiments were performed on dogs. In some a wedge-shaped elliptical segment was excised from the kidney, no clamp being placed on the vessels of the pedicle; the cut surfaces were brought into apposition and sutured. In these animals the kidney of the opposite side was cut in a similar manner with a scalpel. In other animals a broad disc-shaped mass was excised by the cutting current from the cortex of the kidney, and the organ was replaced without sutures in the abdomen. In others again an entire pole or half the kidney was excised, and the remainder returned to the abdomen without sutures or packing. Similar experiments were made on the liver and spleen, portions being excised and the rest returned to the abdomen. In removal of a wedge-shaped mass from the kidney it was observed that the bleeding caused by the cutting current was much less than that caused by the scalpel; it came from the larger vessels and was quickly controlled by the clamp-and-coagulation method. The cut surfaces could then be brought together and deliberately sutured on a dry field. The repair was found to be not dissimilar to that following the knife operation, the final scars being indistinguishable from one another. During removal of the disc-shaped masses there was but little bleeding, and healing was satisfactory. For the removal of a pole of the kidney, or half the organ, a tonsil-snare carrying the current was employed. There was no hæmorrhage, but there was greater destruction of tissue on each side of the cut. In the experiments on the liver Pearse and Ward describe the results as some of the most spectacular in surgery. Large masses of the organ were excised without any bleeding. In a few cases there was slight bleeding from the central artery; but this was quickly stopped by the clamp-and-coagulation method. The spleen was found to be a less favourable organ for attack with the cutting current. When, however, a snare electrode was employed and a heavier current used it was found that portions could be excised without bleeding. The cut surface was covered with omentum, and healing occurred by fibrosis. There was no secondary hæmorrhage after any of the operations, and the experiments seem to show that it would be safe to perform operations on the more vascular organs in the human subject by means of the cutting current, either with little and easily controlled hæmorrhage, or even without any bleeding at all. One very important point—not realised by every surgeon in this country—is well brought out by the investigators. It is the necessity for employing a modified current for procuring hæmostasis when highly vascular organs are cut. A current which is most suitable for this purpose is not the best for cutting skin, fasciæ, and muscle, and obtaining healing by primary union. The absence of secondary hæmorrhage after the experiments by Pearse and Ward should be noted. They point out that it may occur after operations on the mouth and throat, and they attribute it to sepsis. They call attention to the fact that there are now many different types of generators of cutting currents, and that these are not always precisely

[1] Amer. Jour. Surg., 1930, n.s. x., 540.

similar. For this reason they utilise the term "electro-surgery" at present to cover the operations performed by the different kinds of current.

PERCAINE ANALGESIA.

THE technique of spinal analgesia with percaine, which has been carefully elaborated in this country by Dr. Howard Jones, is the subject of a recent paper by Prof. B. Quarella, of Turin. His experience has so far been comparatively slight, being based on some 500 cases only, but he has been pleased with his results. The technique he describes differs materially from that of Howard Jones inasmuch as he does not employ a very dilute solution, and apparently does not place the patient face downwards for the first few minutes after making the injection. It is not unlikely that one or two rather disappointing instances which he mentions are to be attributed to this omission. Dr. M. G. Luquet, in an accompanying contribution,[1] is enthusiastic over his own experiences with percaine, and he has followed the directions of Howard Jones.

DIGESTIBILITY OF RAW AND COOKED MEAT.

To most civilised people the thought of eating raw flesh is distinctly repugnant. The practice of cooking meat not only renders it more attractive in appearance, taste, and smell, but makes it less liable to convey diseases which might otherwise be spread by the agency of pathogenic bacteria or living parasites which it might contain. It is, however, clear that both the digestibility and the nutritive value of animal flesh may be altered by varying degrees of cooking and this effect has often been studied. The latest investigation is by Miss W. M. Clifford,[2] who has compared the rates of digestion of raw, under-cooked, and over-cooked meat by pepsin and trypsin in vitro. Raw beef was found to be less rapidly digested than any variety of cooked beef, with the possible exception of overdone boiled steak. Underdone beef was digested more rapidly than over-cooked meat and the maximum rate of digestion was obtained with lightly roasted joints which were bright red and moist below the surface. Meat which was browned right through as the result of prolonged roasting was more easily digested than either raw meat or meat which had been boiled for one hour. There is a prevalent notion that twice-cooked meat is considerably more indigestible than meat which is served after but one heating. In these in-vitro experiments it was found that merely re-warming underdone beef had no effect on its digestibility, although re-heating the same sample for sufficient time to bring it into the category of over-cooked meat resulted in the same loss of digestibility as would have followed over-cooking in the first instance. There is, therefore, in these experiments some support for the view that the man who normally enjoys underdone meat may find twice-cooked meat indigestible. When, moreover, account is taken of the fact that the sight and taste of a dish of re-cooked meat are repellent to some people and therefore may lead to an inadequate secretion of appetite juice in the stomach, it can be understood why certain sensitive individuals may show a real intolerance to this kind of food. As regards the relative degrees of utilisation of raw and cooked meat, the evidence favours the view that cooking enhances rather than lowers its nutritive value. In isolated examples, as for instance among the Eskimos who may subsist entirely on animal food, cooking may destroy the accessory factors contained in meat and not supplied from any other source, thus leading to serious nutritional disturbances. Many observations have been made on the effect of different degrees of cooking on the nutritive value of meat used as the principal source of protein in the diets of omnivorous animals such as the rat. In most experiments of this kind it has been found that the animals thrive better on cooked than on raw meat, provided that the diets contain all the necessary accessory factors and are palatable. However advisable it may be therefore for some kind of raw food to be included in a diet, there are certainly no reasons for suggesting that meat should be one of the articles taken in this way, unless meat should happen to be the only article of food available to support life for prolonged periods.

[1] Bull. et mém. Soc. de Chir. de Paris, 1930, xxii., 780.
[2] Clifford, W. M.: Biochem. Jour., 1930, xxiv., 1728.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

THE Royal College of Physicians of Edinburgh was founded in 1681, and it has been decided to celebrate the 250th anniversary of its foundation on St. Andrew's Day, Nov. 30th, 1931. An attempt to incorporate the practitioners of medicine in Scotland for the purpose of raising the standard "both of the character and acquirements of physicians" originated in 1617, and in 1621 an application was made to King James I. of England and VI. of Scotland for facilities to that end. The King accordingly issued an order to the Scottish Parliament for the establishment of a college to fulfil the design indicated, but political and religious dissensions prevented the scheme from being carried out, in spite of a characteristic expression from the learned monarch as to the public risks from charlatans. A further attempt was made in 1630, when King Charles I. referred the matter to the Privy Council, but the unsettled state of the country again delayed the project. With Cromwell in power accomplishment took a stride further, for the Protector took up the matter warmly, and a patent was made out in 1656 instituting a College of Physicians of Edinburgh. The patent, however, gave powers to the proposed college which did not meet with general acceptance among doctors, and Cromwell's death put a stop for a time to the proposals. Eventually a charter of incorporation was obtained in the reign of Charles II., chiefly through the exertions of Sir Robert Sibbald and the Earl of Perth, though others active in the movement were Sir Charles Scarborough, physician to the King, and the Duke of York and Albany, afterwards James II. The Great Seal was appended to the Charter on St. Andrew's Day, 1681. The first president of the College was Archibald Stevensone, and an early movement of the new College was to recognise the call of medical charity by instituting a "phisitian to the poore of Edinburgh."

Owing to the destruction of the early minutes of the College, the exact scene of the original meetings of the corporation is in doubt; it may have been the house of Sir Robert Sibbald, the virtual founder of the College and its President in 1684. In 1698 the College resolved to purchase a house especially because of the growing size of the library; but the members continued to meet in apartments rented for the purpose until 1704. In this year a property was bought in Fountain Close, belonging to a Sir James MacKenzie, and seven years later some adjacent land was added, by which time, we learn from contemporary writing

"the grounds and the shrubbery were the envy of the neighbouring Peers, to several of whom the privilege at their request was granted to walk in them as a favour." We may note that the total price of the site and the extension was 5800 marks, or about £320. The buildings erected, however, were not worthy of their environment, and plans for their improvement did not find favour, so that a request was made by the College to the Royal Infirmary for permission to hold meetings at the institution, as well as shelter for the books which were suffering injury. The Infirmary was founded about 50 years later than the College, and may be said to represent the development of the action of the College in appointing members of their body to attend the sick poor. For 15 years the College enjoyed the hospitality of the Infirmary and the premises in Fountain Court were sold in 1770 for £800. A College Hall was commenced in George-street in 1775, when the foundation-stone was laid by the famous William Cullen, the President. The present hall, designed by Thomas Hamilton, dates from 1844, the adjoining premises having been added at different times. The story of the College, especially in its various connexions with the Royal Infirmary, illustrates the progress of academic and clinical medicine in Edinburgh from the union of the two kingdoms.

THE FULHAM CHIMNEY-STACK.

On Jan. 27th the Electricity Commissioners announced their consent to an extension of the generating station at Townmead-road, Fulham, proposed by the Fulham Metropolitan Borough Council. In doing so Sir John Brooke, chairman of the commissioners, mentioned the obligation to secure an adequate supply of cheap electricity in London by the autumn of 1933, and he gave this as a reason for consenting to the installation before the best means for the elimination of sulphur from fuel gases has been finally settled. It was a disappointment to the London County Council and to the Councils of Westminster, Kensington, and Chelsea, which were associated with it in opposing the application, that it should have proved necessary to instal a power station at all in that part of the Thames valley; the promoters, however, were able to point to an unforeseen growth of industry along the Great Western railway line as it approaches London, and of an extraordinary demand for electricity for all purposes in this area. This development it is that has stood in the way of banishing all these large generating stations "below bridges," as the euphemistic phrase runs for putting them in the neighbourhood of Barking; Fulham assured the commissioners that it would cost an extra £2,240,000 to bring the mains under ground if the station was erected down river, or a yearly rental of nearly £200,000. But although the representations of the four councils were powerless to restrain Fulham from erecting a vast new chimney-stack, they were effective in prescribing conditions for the effluent gases. The councils submitted that there should be adequate safeguards for dealing with sulphur fumes or noxious gases, smoke, grit, coal-dust and other particles, and water; that periodic analyses should be made of the effluent gases, and opportunity given to visit and verify results; that the sulphur content of the effluent gases should not be more than gr. 0·02 per cub. ft. expressed as sulphur; that no visible dark or opaque smoke should be emitted save a certain amount of condensed steam in cold weather; that no grit or other particles should be emitted so as to cause a nuisance; and that any chimneys should be not less than 300 ft. high, with arrangement for warming the gases before discharge. Finally, and most significant, is the provision that in the event of improved plant or devices being discovered, such improvements shall be introduced into the power station at the word of the Electricity Commissioners. The decision of the commissioners on this point is so precise and inclusive that it may serve as a precedent for similar undertakings. If the Electricity Commissioners, in agreement with the Commissioners of Works and the Minister of Health, shall decide that the methods used by the Borough Council are not the most efficient methods reasonably practicable at the time, the Borough Council shall thereupon at their own expense forthwith carry out and put into continuous use all such changes in the said methods as may be specified by the Electricity Commissioners, in agreement with the Commissioners of Works and the Minister of Health. While the commissioners were fully agreed that the best practicable elimination of oxides of sulphur should be striven after, they did not see their way to prescribe in their formal consent the precise degree of efficiency to be attained at any time by the sulphur elimination plant. The obligation on Fulham to keep in touch with the progress of knowledge and to adapt its effluent gases to that knowledge, is a far more valuable safeguard than the prescription of a minimum limit of sulphur, which we may well hope is to be reduced to a vanishing quantity. Otherwise, however high the chimneys, there may come an occasion when owing to stillness and temperature inversion the atmosphere of the neighbourhood may become seriously or even dangerously polluted.

AUTO-TRANSFUSION.

In a discussion on ruptured ectopic pregnancy reported on p. 413 several speakers referred to the method of "auto-transfusion" or return of the patient's own extravasated blood to the circulation. The history and use of this method have lately been reviewed by Dr. G. E. May[1] who thinks it is sometimes of inestimable value. The contra-indications, he says, are few, for an old chronic salpingitis does not seem to contaminate the blood and when life is at stake it is worth risking a mild infection. Obviously blood from the peritoneum should not be used if there is frank infection, or if it is stagnant, as when bleeding has been going on for days or weeks. The apparatus he describes is simple, comprising a beaker, a rod, a funnel, two cups, and two 50 c.cm. ampoules of 2 per cent. sodium citrate. A suction apparatus is useful, but not necessary. The quantity of citrate used is 10 c.cm. of 2 per cent. solution for each 90 c.cm. of blood. The abdomen is opened with the patient lying flat; a small incision is made in the peritoneum and the edges are held up to prevent loss of blood. A cup is placed against one edge of the incision, and the blood is run into it and quickly transferred to the beaker containing the citrate which is constantly stirred by a nurse. The peritoneal incision is then enlarged, the tube is brought up and its bleeding stopped, and then the remaining blood is baled out with the cups. The patient has been receiving saline solution throughout the operation and the citrated blood is added to the saline by filtering it through 15 to 20 layers of gauze in the funnel into the gravity flask. The infusion should be made by gravity rather than by pressure, so as to

[1] New Eng. Jour. Med., Dec. 11th, 1930, p. 1197.

avoid overloading the right side of the heart. May reports two cases in which this method was followed with very satisfactory results.

AN INDEX OF PHYSIOLOGY.

Dr. J. G. Priestley, of Oxford, has accomplished his task of preparing a subject-index to the first 60 volumes of the *Journal of Physiology*. It was in 1873 that the late Sir Michael Foster published the first of three volumes of papers from the physiological laboratory of Cambridge University which stand in ancestral relation to this journal; he asked the Master and Fellows of Trinity College, whose prælector he was, to regard the pages as "the first cotyledonary leaves which may assure them that the seed they have sown has germinated, but which can tell little what kind of plant it will grow to or what manner of fruit it will bear." Foster lived long enough to see at least a part of the immense development of physiology which has occurred in recent years, and of this development, as Dr. Priestley says, no insignificant part is represented by papers in these first 60 volumes. The subject-index is a companion volume to the History of the Physiological Society during its first 50 years (1876–1926), written by Sir Edward Sharpey-Schafer and issued by the society as a supplement to the journal in Dec., 1927. In this survey he drew largely on the minute books of the society, all of which have been preserved, and he recalls that when Foster established the *Journal of Physiology* in 1878 there was no journal in the English language wholly devoted to physiology, and it took at once a leading position as a medium for publication of original work. In 1894 the management was taken over by G. J. Langley, on whose death in 1925 the journal became the property of the society. An author-index of the same 60 volumes has also been issued, and these three special numbers of the journal, covering as they do an important period in the history of science, represent an act of piety in preserving the work of a generation which is passing or has passed.

ANTIVENEREAL PROPHYLAXIS.

ON Feb. 9th Surgeon Commander H. R. B. Hull read a detailed paper on antivenereal prophylaxis in the Services to a meeting of the United Services Section of the Royal Society of Medicine. Chemical prophylaxis, he said, is giving unsatisfactory results, and he therefore recommends mechanical prophylaxis—in which he agrees with Dr. J. A. Cavaillon, Secretary-General of the International Union against Venereal Disease.[1] Lectures do not prevent the men from taking risks, and the interest aroused by films is not always the interest that is desired. The results of disinfection are not as promised, and their failure is not due to intoxication as is sometimes alleged in excuse. Commander Hull fears that the antiseptics used, such as calomel cream, cause a slight irritation of the delicate mucous membrane, and perhaps increase risk. Only from Iraq, where disinfection is done in every case by a trained orderly, was a hopeful note presented in the discussion. Since infection is maintained by these women, it was asked whether instruction about disease and disinfection should not be given to them. This has been tried in North Africa and, it is claimed, with success. In the last thirty years, 1900–29, venereal disease in the Navy has greatly diminished; cases have fallen by a third (120 to 73 per 1000), and the days lost under treatment have been halved. The reduction is chiefly in syphilis, especially secondary, its cases having fallen by 90 per cent. (21·8 to 1·84 per 1000) and its invaliding by 85 per cent. (1·64 to 0·22). Sores have fallen a half, and only gonorrhœa remains on about the same level as formerly. The fall in venereal disease is masked in the statistical reports by the similar, though less marked, diminution in all illness during these 30 years.

[1] Second Conference on the Health and Welfare of Merchant Seamen, 1929, p. 157.

SURGICAL AND BIOLOGICAL RESEARCH.

THE great liberality of Mr. Buckston Browne in establishing an Institute for Surgical and Biological Research in connexion with the Royal College of Surgeons of England has been described in our columns (see THE LANCET, Jan. 3rd, p. 29), but the text of the letter in which the splendid gift was offered to the College is now published in the transactions of the last Council meeting. The wisdom and the open-handedness alike of the donor appear in the few sound conditions implied, and only just implied, in the offer, as well as in the great pecuniary total of his generosity.

THE ABOLITION OF UNIVERSITY FRANCHISE.

PROTESTS against the clause in the Representation of the People (No. 2) Bill which would abolish University franchise have been more widely signed since the Bill came actually before the House of Commons. Perhaps no class is more likely to lose a power of voting in this way than the medical profession, so that when the measure is before a Committee of the whole House the medical members may be in some cases embarrassed by the absence of agreement between their party and their professional call.

THE Milroy lectures of the Royal College of Physicians of London will be given on Feb. 26th and March 3rd and 5th by Surgeon-Captain S. F. Dudley. His title is Some Lessons of the Distribution of Infectious Disease in the Royal Navy. Dr. Macdonald Critchley will deliver the Goulstonian lectures, on the Neurology of Old Age, on March 10th, 12th, and 17th, and Sir William Willcox the Lumleian lectures, on Toxic Jaundice, on the 19th, 24th, and 26th. All these lectures will be given at 5 P.M. at the College in Pall Mall East, S.W.

INTERNATIONAL COURSE AT LOCARNO.—The second of the international medical post-graduate courses arranged by the Tomarkin Foundation of New York will be held at Locarno, Switzerland, from April 14th to 28th. Among those who have already consented to give lectures are Prof. E. Abderhalden (Halle), Prof. F. Blumenthal and Prof. F. Neufeld (Berlin), Prof. A. Calmette, Prof. C. Levaditi, Prof. P. Vallery-Radot, and Prof. C. Regaud (Paris), Prof. J. Jadassohn (Breslau), Baron Korànyi (Budapest), Prof. R. Leriche (Strasbourg), Prof. W. Neumann and Prof. F. Silberstein (Vienna), Prof. C. Pezzi (Milan), Prof. L. Asher and Prof. F. de Quervain (Berne), and Prof. P. Uhlenhuth (Freiburg i. Br.). Locarno, which is now the European headquarters of the Foundation, is situated at the foot of the Southern Alps on the shores of Lake Maggiore. Further particulars of the course may be had from the secretary of the Tomarkin Foundation, Locarno (Box 128).

A POST-GRADUATE COURSE

MOTIVES AND MECHANISMS OF THE MIND.*

VIII.—SEXUAL CONTRASTS.

INTRODUCTORY.

THE subject of this lecture is one of the most difficult in all psychology. Strange though it may seem, psychologists are not at all sure as to what the difference between a man and a woman really is. It has been a subject on which much has been written, but mostly for our purpose of doubtful value. This lecture is offered with great diffidence, and does not try to present any final elucidation of this problem, which is at the same time so simple and so difficult. It has become necessary, however, to make some attempt to distinguish between the psychology of the sexes, because for the purpose of simplication, Lectures V., VI., and VII. were almost exclusively devoted to the psychological development and emotional reactions of the male. We should be getting off too lightly if we attempted to leave it at that, and we must now try to see what particular deviations may be expected in the female, and to point out such psychological differences between the sexes as seem to be of importance.

It may seem strange that there is so much doubt and difficulty about the subject of psychological sexual differences, but some of the reasons will become more apparent as this lecture proceeds. It is not, however, in psychology alone that simple problems are often the most difficult to solve. There is the same difficulty to be found in general medicine, such as, for example, to find the cause and cure of every-day disorders like the common cold or chilblains. Such deficiencies as these in the otherwise imposing structure of our knowledge should help to keep us humble.

ANATOMICAL AND PHYSIOLOGICAL CONSIDERATIONS.

It is because the anatomical differences are so simple that the psychological ones appear to be so complex by contrast. Anatomically, the undifferentiated borderline between the two sexes is a matter of extreme rarity, although those cases in which unfortunate individuals have publicly to change their sex at puberty, prove the occasional existence of the true anatomical hermaphrodite. Even in such cases the literature does not appear to show any case of actual bisexual potency. Although both the male and female organs may be present in the same individual, they never both seem to be able to function. Anatomically then, except for rare cases of hermaphroditism, distinction between the male and the female is perfectly definite.

Developmentally, however, we see how the male and female organs are derived morphologically from a common origin. The testes are derived from the same embryonic tissue as the ovary, and the penis and clitoris correspond in origin, but not in function. Biologically it is known that the simplest type of organism possesses no sex differentiation, but reproduces itself by a simple process of fission. Only at a later stage of development does sexual differentiation take place, with fertilisation of one sex by the other. It would appear that this method arose in a later state of evolution, as a more effective way to safeguard the propagation of the species.

Behind the apparent anatomical contrast, we find the morphological correspondence. Anatomically, the difference is as simple as male, female, and hermaphrodite. Morphologically, both male and female are potentially bisexual. Psychologically, there would seem to be to some degree the same bisexual potentiality, a graduated scale of "maleness" and "femaleness," as if one sex is functional and dominant, at the expense of the more or less complete elimination of the characteristics of the other sex. It would seem, therefore, that the psychological problem is in reality a very difficult one, as in each individual of either sex there are varying components of "maleness" and "femaleness," dominant or in abeyance.

HISTORICAL CONSIDERATIONS.

It is an important part of our psychological theory to regard each individual as being the sum of certain racial experiences acquired by repetition over a long period of evolution. If this be granted, it is obvious that such differences in general experience as men and women must have had during the history of the race, will have added in some degree to their deeper psychological divergences. Biologically, the function of women has always been procreative, and their duty was to produce and care for the children. Men, on the other hand, were the fighters and fenders for the family. The functions, experiences, and emotional reactions of men and women must therefore have always been very different. The men went out hunting, met with various adventures and had to solve innumerable problems of transport, battle, and food-supply. This probably encouraged the development both of the aggressive and rational elements in their nature. These were required for the tasks which were part of their everyday lives. Women, on the other hand, developed different characteristics more suited to their different function. There was less need to be aggressive, because their duties were maternal and domestic. They did not have to kill the animal, but to cook it. They did not have to fight, but to feed and protect their young. Women, therefore, would tend to develop a more passive and emotional, and less rational, attitude towards life. Their feelings would be more tender and their hearts more soft.

When it came to comparative judgment as to the relative importance of the two sexes, there is no doubt as to who were the judges and, we may therefore suspect, who were judged superior. In battle and in council it was the men of the tribe who mattered. The function of women was "only" child-bearing, and their position in the tribe was generally regarded as inferior. For how many centuries have women been *regarded* as inferior, and therefore *experienced a feeling of* inferiority? Whereas the tender emotional quality of women may be a primary psychological characteristic, associated with their biological function of child-bearing, it is suggested that this *feeling of inferiority* may have been acquired from the source of historical repetition. If this is so, we may expect to find *inferiority feeling as the dominant factor in the psychopathology of women.*

It is only in comparatively recent years that the status of women has been raised above that of the primitive tribal child-bearing level. In parts of the world at the present day women are still regarded as

* A course of 12 lectures delivered under the auspices of the Tavistock Clinic, Tavistock-square, by Dr. E. Graham Howe during the autumn session of 1930. Earlier lectures of the series have appeared weekly in THE LANCET since Jan. 3rd.

being of less value than cattle. It is a matter for congratulation that civilisation, having at last partly discovered women, has now added to that first progressive step the discovery of children. But the fact remains that however much the last few generations of women may have been raised as to their social status above their forbears, they seem still to have an inborn feeling of inferiority which remains an important characteristic in their psychology, quite independent of the fact that there is at present less justification for it. The unwillingness on the part of men to afford women the privileges of an equal social and professional status is probably due to the same historical cause. In spite of their improved status women are still meeting with more than a little resistance from the male sex, and it seems as if the influence of the past still demands that men should keep them in a state of subjection.

While we are considering the effects of historical repetition on the production of inborn feeling tendencies, it is probably necessary to review the psychological effect upon both sexes of the customary relative positions in the act of coitus. The aggressive dominance of the male is temporarily at least in a position of complete superiority, whereas the woman is in a position of inferiority. It has been pointed out already how our unconscious feelings and values are determined by such simple factors as years and stature. The position in coitus is such another simple factor which, through age-long repetition, has probably had important psychological consequences. In such simple ways are our present values dependent upon past experience. *But they are not, therefore, by any means necessarily correct.*

Psychopathology and the "Normal."

Can we speak of the psychopatholgy of "normal" men and women? It depends what we mean by the word. Only if an individual is perfectly mature and developed will psychopathology be absent, and this is rarely if ever the case. Some degree of psychopathology is normal in all of us, and it is therefore correct to speak of the *normal psychopathology* of the sexes.

It would seem that the psychopathology of men is simpler than is the case with women, in whom mechanisms and complexes are less obvious. Analysis of women is usually found to be more difficult to understand clearly and in detail. And yet from another point of view their psychology seems simpler, because it is more fundamentally instinctive and emotional, and less obscured by rational complications. Perhaps we may say that women are partly modified men, but we must also allow them to some extent an independent nature of their own. They have always been associated with sphinx-like impenetrability, and psychologists also find themselves faced by the same figure of veiled mystery. However, psychologists can have little respect for veils, and must do their best to see what lies behind them.

If the fundamental psychopathology of women is *inferiority*, what unconscious affect may we expect to find occupying the same position in the case of men?

INDIVIDUAL EMOTIONAL DIFFERENCES.

Let us start at the beginning. The infant's first desire is for food, and the source of gratification is the maternal breast. (The breast has been so often repeated as a racial experience that the introduction of the comparatively modern feeding-bottle seems to have made no difference. To the infant mind it is taken as if it were breast.) The infant, whether boy or girl, is "thrown into the arms" of a woman, if we are allowed to speak a little metaphorically, and there the primary desire of hunger is satisfied under conditions of peculiar emotional significance. But for the boy there is a difference of *sexual polarity*, which is absent in the case of the girl. There is no need for us to suppose that he is conscious of any difference, but this is beside the point, since we are dealing with the reaction and development of inborn feeling states. The boy experiences this primary emotional intimacy and gratification under circumstances which are radically different for the girl, because of the absence of the heterosexual factor. The latter is never thrown into quite the same emotional intimacy with her father, experience of whom is deferred until later, when many other impressions have been absorbed. From this we may deduce that the Œdipus complex will be simpler, deeper, and more frequent in its effects in the male than the corresponding Electra complex in the female. This statement is confirmed by clinical experience.

But the primary affect of the Œdipus complex is guilt, especially associated with sexual stimuli. This then would seem to be our starting-point in male and female psychological divergence—*the primary emotional intimacy of the male with the mother induces a stronger defensive affect of guilt towards sex than is the case with the female.*

These affects of guilt in the male, and inferiority in the female, are normal, in so far as they are subjectively and generally present to a greater or less degree as the results of past racial experience. But, like other normal psychopathology, they require to be outgrown before objective reality can be appreciated at its true value. We may state the following axiom: "Although a feeling tendency, such as sex guilt, may be universally distributed, it is not therefore necessarily true." The unconsciously defensive attitude towards guilt is only associated with the earlier stages of sexual development, not with its maturity. In so far as it is universal, it is an example of a general psychopathology, and indicates a general "fixation," or incompleteness of sexual development. It is part of the function of growth to remove this initial defensive and unconscious guilt-feeling from sex, which is apparently particularly deeply rooted in the male sex.

But we seem to be on dangerous ground. Do we wish to eliminate guilt altogether, or can we analyse it and distinguish two different kinds, one bad and one good? Perhaps a consideration of "morals" will help to clear up the problem.

There are two kinds of morals: (*a*) defensive and unconscious, (*b*) selective and æsthetic. The former are those which are associated with primary unconscious guilt, and their function is protective against a desire which is felt to be wrong, and the consequence of which is a punishment to be feared. The latter are not motivated by fear, but by desire. They are on a higher plane, consciously selective, emotionally æsthetic, and are compounded of desire, caution, consideration for others, and a mature wisdom of outlook. To infringe the unconscious code, which is akin to taboo, is to invoke unconscious guilt and fear of punishment. To infringe the other code is to experience a quite different and psychologically desirable feeling of moral or æsthetic disapproval.

If we generalise at this point we must do so tentatively and cautiously, or men will all be found in the group of morals of the defensive and unconscious kind, and women presumably in the other. That

would be quite untrue because it would go too far. All we can suggest is that men are more prone to react to sex with a feeling of pathological guilt, and a defensive unconscious moral code, than are women. For this statement we have some confirmation in the fact that women are generally regarded as being more "amoral" than men, and at the same time simpler and more free in sexual matters. But immediately a doubt comes into our minds—"That is not true, either for all men or all women, although it may be true for some. What about the others?"

We can only pick out certain general tendencies, and examine them for what they are worth. If they are there we can expect the consequences—but not in every individual nor all the time. There are so many other factors which have their own consequences which complicate the picture, and of those one or two will now be mentioned, which go some way to account for the exceptions to those principles which have already been suggested.

The assertiveness, "superiority," comparative independence, and ready "over-compensation" of the normal male help him to cast off the fetters of his early emotional fixation, whereas the female is more prone to accept the moral code to which she is accustomed, as she has not the same aggressive attitude towards life. The male is by nature more inclined to adventure and rebellion, but his guilt code affects his attitude towards women, if in no other way than by his trying to pass it over to them. If women are brought up to the belief that sex is guilty, they are more liable to believe it than are men. It is the guilt sense in man which tends both to idealise and to desexualise women, at the same time contributing to that social conspiracy which has in the past attempted to deny women the right either to sexual knowledge or sexual feelings. When a girl develops an Electra complex all society and conventions help to fix it upon her. But when a boy develops an Œdipus complex there is much more "over-compensation" to help him to lose it. Hence, when it occurs, the Electra complex and its sexual repression is liable to be very severe. We may summarise by saying that over-compensation is a help for men to solve their problems of unconscious sexual guilt after a fashion, but it is obtained at the expense of projecting that guilt on to women.

The subject of masturbation is also important in the influence which it brings to bear on guilt psychology. Being much more frequent in the boy than in the girl, the guilt with which it is associated is very liable to become transferred to all subsequent sexual experience. There are many men who regard sex intercourse in marriage with much the same guilt feeling as masturbation, as something sensually desirable but morally improper, to be got over as soon as possible without a corresponding sensual gratification being permitted to the woman. The result of this attitude is disastrous, and is responsible for much unhappiness and subsequent ill-health, especially for the woman.

DEFENSIVE REACTIONS.

For the man there are, therefore, three different kinds of defensive reactions for his guilt feelings. The first is *morals*, of a defensive and unconscious kind, which tend to a certain degree of sexual clumsiness, priggishness, and ignorance of the elements of mutual sexual hygiene. The second is *over-compensation*, which shows itself in various ways as a bold bid for sexual freedom and adventure, but does not usually overcome the underlying tendencies of unconscious motives. The third is the *idealisation* and *desexualisation* of women—a refusal to see them as they really are, a preference for an exalted and sphinx-like inscrutability in women, and a general attitude of sentimental unreality between the sexes. It is for these reasons that women must be kept "innocent" of sexual facts and of the "seamy side" of life—as if knowledge of the elementary facts of life would harm them.

In the same way the unconscious defensive mechanisms in women must protect them from feelings of inferiority. It is perhaps for this reason that women need to be constantly praised, to be told repeatedly of their charm, the beauty of their clothes, and their superiority over others. There is a fundamental Narcissism in women which is lacking in men, and which men cannot afford to neglect. Women like to be admired quite as much as they like to admire themselves, and clothes carry the transferred affect from their bodies. They want to feel admired, loved, superior, and it is not enough for them that the appreciative male should be silently aware of their charm. It is because of her inferiority, perhaps, that a woman wants to be told that she is superior to all others—and told again.

When inferiority feeling is not assuaged, the results are those familiar examples of defensive mechanisms, jealousy, cattiness, nagging, and scandal-mongering, the underlying motives of all of which are relative disparagement of someone else, whether rival, no one in particular, mother-in-law, or husband. Of how much unhappiness on all sides are such uncorrected inferiority feelings and defensive mechanisms the cause! Whether the unconscious punitive and retaliatory dynamism is directed towards cattiness, nagging, or intensive propaganda, it is both a waste of good energy and a source of progressive and widespread unhappiness.

In confirmation of the preceding remarks, the following quotations have been taken from the autobiography of Sir Ellis Hume-Williams, who was for 40 years a divorce court barrister ("The World, the House, and the Bar," p. 260 et seq.).

> "I think, strange as it may seem, women are less faithful than men. The risk of an illicit liaison is sometimes better to a woman than the sameness of uneventful domesticity. There are happy, if usually selfish bachelors. But the average woman cannot live a life of even moderate happiness without love, affection, and attention. It is the food of her soul, and without it her spiritual being droops and withers, just as her body would without nourishment. If her husband does not or cannot realise what affection means to a woman, and does not both possess it and show it, he is not entitled to be surprised if she takes a lover.
>
> "Men are, it is true, more subject to a 'sex urge,' but the visitation is generally transient and a tactful woman can usually deal with it. Also, while no man has really understood a woman, the average man is the easiest thing in the world to understand and manage by any woman who thinks it worth her while.
>
> "Matrimonial differences generally begin by the man being too content at having secured his woman, too content to continue the little attentions with which he has wooed her. There are still men in existence who look on a wife once won as a sort of possession with which they can do what they please. The thing which keeps together many a couple who might be happier apart is the love of the woman for her children—a love which, as a rule, moves a woman more deeply than a man."

WHAT MEN WISH WOMEN TO BE.

The reason why the subject of sexual differences has remained for so long in the dark is perhaps because the men and women who have written about it *did not know what they wanted to find*. Before we are able to see anything correctly as it really is, it is necessary first to find out what it is that we want to see because, unless we do, we shall probably only

see what we want to see and so deceive ourselves. We must first of all take the mirror of wish-fulfilment from in front of our eyes. What do we want to see? The truth may be the same as that, but on the other hand, it may not.

In the previous lecture it was suggested that there was a very strong reason for men wishing to idealise, sentimentalise, and desexualise women. Men want women to be maternal, super-human, and possessed of immaculate purity, and therefore they wish to protect them from any tarnishing touch of reality. Such women would, of course, have no sexual feelings, which would be the height of purity and propriety. They would have no knowledge of sexual facts, and must be kept sublimely innocent of what goes on behind their backs.

So much for one side of the psychopathology of what men want from women. The other side completes the picture. They want sexual satisfaction, male superiority, and completeness of possession. Sometimes they also want somebody to punish and despise, from a motive of retaliation. It is easy to realise that a great deal of what has been written about women falls under one of these three headings: they are either sentimentally idealised, voluptuously over-sexualised, or generally despised. But women are not, in fact, any one of these three. They gain nothing of moral stature or æsthetic beauty by being idealised into benevolent mother phantasies and impossible prudes. Their sexual attractions require neither to be sentimentalised nor despised. Much of what is called "the veil of the impenetrable Sphinx" is due to these errors of phantasy which men have projected on to women in the chosen blindness of their wish-fulfilment. Behind it all there is the real figure of the woman—independent, maternal, coöperative, sexual, and above all, human. If men continue to think that women are only such as they wish them to be, they must always be wrong and women must remain impenetrable riddles. But it is not true. A woman's sexual feelings are quite as intense and quite as worthy of fulfilment as are a man's. A woman's function is different, but to be valued quite as highly. Women are, in fact, just that indivisible unity of the "sacred" and the "profane," but only phantasy can take the one and ignore the other. Therein lies their humanity, their living character, and at least part of their charm.

WHAT MEN WISH THEMSELVES TO BE.

While we are considering what men wish women to be, it will perhaps be useful at the same time to discover what men wish themselves to be. Again there is the tendency to divide themselves into two very different characters: one, the prig, the other the omnipotent and omniscient cave man. By doing so, they effectively disguise from themselves any feeling either of guilt or of inferiority which may be unconsciously causing them anxiety. But again, seeing themselves as the image of their wish, they are blind to themselves as they really are.

WHAT WOMEN WISH MEN TO BE.

Sex is for men a subsidiary function, but not so for women It is too intimately associated with their primary function, maternity. For men, sex is only a part of life, but in that part it is an *end in itself*. For women it is *a means to the greater end of maternity*, which is the function for which they are biologically and psychologically intended and without which their lives must always remain, to some extent, incomplete. Women are probably less inclined to idealise men. They regard the successful exercise of man's sexual function with more simplicity, both as an end in itself and as a means to a greater end. Women have not the same reason to be wrong in their judgment of men, as men have in their judgment of women. In spite of the conventional platitudes of society and men in general, women do not require much experience of men in order to see them as they really are. It is true that they may also tend to idealise and hero-worship, but provided they are not made to feel inferior and unattractive they are willing to tolerate men's multiple deficiencies.

WHAT WOMEN WISH THEMSELVES TO BE.

What do women want to feel about themselves? Again they seem to be more satisfied with reality than men are, and their goal is primarily a simple one. It is not for nothing that woman's interest in clothes and jewels is greater than that of men. All women wish to look nice, to be at their best and most attractive in appearance. It is not only that they are more "Narcissan" than men, but their attractiveness is also the chief means to the desired end of their biological function—namely, maternity. It does not matter if maternity has been achieved or is unattainable, the need to look and feel and be acclaimed attractive remains dominant in female psychology. Whatever may be the standards of present-day civilisation and culture, the desire to be attractive is an inevitable hereditary contribution from woman's past.

Aggression and Submission—Sadism and Masochism.

There are two psychological characteristics which we seem to be able to apply respectively to men and women—namely, aggression and submission. The male is characteristically the aggressive type, the female the submissive. This distinction may have been determined, at any rate partly, through historical repetition, the quality of aggression being necessary to the hunter, whereas submission is more necessary for the woman at home. But aggressiveness and submissiveness are not necessarily the qualities by which superiority and inferiority are to be judged. They are perhaps more to be regarded as modes of feeling associated with different functions. However this may be, these characteristics seem to apply to the typical male and female. There are, of course, many aggressive women and submissive men, but it has already been stated that psychology and anatomy do not always correspond. From the psychological point of view the aggressive woman is a male woman, and the submissive man is a female man.

Although not by any means identical, it is useful to link sadism and masochism with aggression and submission. In sadism we have a typically masculine reaction, which tends to associate sexual feeling with super-domination and a certain pleasure in the infliction of pain. In masochism, on the other hand, sexual gratification is associated with a feeling of being overpowered and the pleasure of pain inflicted. There are many difficulties, however, in understanding the psychopathology of sadism and masochism, and it is best to admit that we do not know by any means all about these two very fundamental and primitive feelings. It is quite true to say that sadism is to some extent a normal component of masculine, and masochism of feminine, sexuality. The two, however, so frequently occur in one individual that they may be as intimately linked as the two

sides of a penny. The sadist is frequently also the masochist, and the masochist the sadist.

Sadism and masochism vary in degree from the normal to the severely pathological.

A boy of 14 was able for two years to behave like a young Rasputin, and to completely terrorise the younger boys of his house at school. He would make appointments to thrash a certain boy every Wednesday afternoon during the term at 3 o'clock in a certain spinney; another would be told that he was to forfeit every breakfast egg; another that he was to contribute 2*s.* 6*d.* a week of his pocket money; and another that he required a pocket knife which, though it was broken and useless, would cost him 4*s.* 6*d.*, and if he had not got the money he would need to borrow it or be thrashed. He possessed such awe-inspiring qualities that no one for two years dared to disobey his orders or report him to the authorities. He had no other sex life than these sadistic thrashings, which were accompanied by sexual orgasms.

A patient with a less pathological degree of masochism made the following remarks:—

"When I was playing bridge the other night, I held ten hearts to the ace, king, queen, but I let myself be called out by my partner. I would always much rather someone got the better of me, especially if I were quite sure I was in the right."

It is not everyone who is so fortunate in being able to evade responsibility, whilst retaining both a sense of power and of unjust grievance. Masochism to a more extreme degree is found in those cases which delight in inflicting punishment upon themselves, sometimes by binding themselves with cords, or being beaten, and is again associated with sexual pleasure. A perusal of the daily papers, other than those of the highest repute, shows the extent to which the general mass of readers like suggestive, sadistic sensationalism served at the breakfast table. In the Sunday press of the same type this tendency is even more evident. This interesting example occurred in a Sunday paper when this article was being written:—

"A strange form of hero-worship has taken hold of the young women of Czecho-Slovakia. Hundreds of them have fallen in love with a newly appointed hangman. Physically he is a fine specimen of manhood. He was appointed hangman only a few weeks ago. On the day following the execution huge crowds, consisting mostly of young girls and women, besieged the inn where he was staying. After carrying out his first execution he received more than 6000 offers of marriage in letters."

One of the after-effects of the sadism of the war seems to have been the liberation of the craving for sensationalism, which has been given free vent of recent years in detective novels and cinema melodramas.

Before we try to understand the source and value of sadism and masochism, it is useful to realise the extent to which *every intense emotion tends to arouse sexual feeling*. The scenes of Armistice night were, perhaps, typical of the sexual excitement associated with the intense feeling of emotional relief after the strain of the war years. Intense religious feeling may also very easily find a sexual channel of expression, and to this association is due, on the one hand, the exploits of a Rasputin, and on the other the emotional difficulties of the religious-minded spinster. It is also sometimes stated that a woman in the intensity of her grief at the loss of her husband is liable to fall to the seductions of another wooer. Any intense experience of beauty, whether visual or auditory, may have the same effect. In general, therefore, it would appear that emotional intensity of any kind tends to express itself through the sexual channel.

It has been suggested that the origin of sadism and masochism is to be found in the feelings of the infant towards the maternal breast. The pummelling and thwarted desire of the feeding infant when the breast is removed is certainly suggestive of the sadistic attitude, whereas the satisfied and submissive relaxation when desire is fulfilled at the end of a meal is again suggestive of masochism. To what extent this can be regarded as the sole source of sadism and masochism it is difficult to say. In sadism there is also the punitive and retaliatory tendency, which derives pleasure from inflicting pain and punishment. Sadism may, therefore, be an infantile reaction towards deprivation. Masochism, on the other hand, as a form of self-punishment, may be related to the need for a defensive self-punitive reaction against guilt. Whatever may be their psychopathology, we must regard both sadism and masochism as wish-fulfilment at an infantile level of emotional satisfaction, and they require raising to a higher sublimation before they can be considered as typical respectively of male and female psychology.

Thinking and Intuition.

Sir Ellis Hume-Williams was quoted as saying that "No man has ever really understood a woman," and this is frequently a cause of man's complaint. In spite of the fact that unconsciously they are themselves largely responsible for their own ignorance, men feel that they ought to be able to understand a woman and they are annoyed when she will not fit into any one of their logical watertight compartments. When a man is annoyed with a woman, one of his strongest criticisms of the female sex in general is that they are all "unreasonable," and therefore, by his reasoned and logical system, so much inferior to himself. Men regard their reason as something undubitably superior and are liable to be extremely annoyed when a woman arrives at her judgment with miraculous ease and swiftness, while he is left reasonably behind, still anxiously weighing the pros and cons. He is sometimes inclined to ascribe the woman's method to nothing higher than emotional prejudice, without any basis in logical fact. However, it frequently happens that the woman's rapid intuition, which has leapt at a single bound over all such difficulties as reason perceives, is quite as right in its conclusion as the slower method which may still, in spite of all its logic, be wrong in its ultimate judgment.

We are liable to over-value the rational function of consciousness, because it may be purposively defensive. Unconsciously, men are afraid of women, and thought and reason are a method of staying dangerous emotion. "Stop! Let me think!" is more than a plea for time. It is also a plea for safety, and when we are afraid, if we are not in a panic, we like to stop and think. Thinking may be a useful safeguarding process developed in self-defence against the incomprehensible ways of the fearful female.

Whereas men have needed to develop reason in order the better to do their work, women have needed something more rapid and more emotional to aid them in their domestic duties. This function is intuition,which men regard as inferior to reason, but it is very doubtful indeed if it is so. Reason is just as liable to be biased and led astray by emotion and wish-fulfilment, although intuition may leap at a judgment where reason lags behind to consider it. Reason can *prove* that it is right (even if it is not), but intuition is quite satisfied to *feel* that it is right. Reason will always suffer in an argument with intuition, in spite of the fact that it can prove every word it says. The complaint that women are "unreasonable" is, therefore, often a true one, but

they are only unreasonable because they are essentially intuitive. This is not to say that they are necessarily inferior in their capacity for sound judgment.

Science is a most reasonable and logical method, but it depends for its incidence and ground work upon a *working hypothesis*. The number of men who can create a working hypothesis is definitely limited, because to do so necessitates an intuitive grasp of the problem which is essentially beyond reason. A working hypothesis is a "probability," a brilliant guess, which reason then proceeds to test by observation and experiment. However, reason is by no means to be infallibly trusted, because it is itself liable to be prejudiced and disturbed by wish-fulfilment. Much that passes as scientific research is vitiated from the scientific standpoint because the "scientist" desires certain results, and finds little difficulty in proving what he wishes to prove. Even such hard "facts" as statistics are amenable to wish-fulfilment. Vaccinators and antivaccinators, whose motives do not lack unconscious wish-fulfilment, can, if presented with the same statistics, prove from them their own pet theories without much difficulty.

Reason is not in itself creative, it is only comparative. It collects and compares data and can thence deduce a formula. Reason is mathematically correct, and by its measure 2 and 2 will always make 4. Not so, however, with intuition. Intuition is essentially creative and by putting 2 and 2 together may make something quite different from 4, to the pronounced discomfort of Reason. But it is true to say that only in pure mathematics, and then not of the very modern kind, does 2 and 2 make 4. If 2 and 2 are other than mathematical symbols, their character and summation introduce a new factor which is more than the simple mathematical formula $2+2=4$. "The whole is more than the sum of the parts," and whereas mathematics may be true in reason it is not so true in intuition. Where reason is groping amongst the parts, intuition grasps the whole.

Intuition is a gift of genius and is a sign of the creative mind. To this extent it may be said to be superior to reason, which is a much more commonplace quality. Where reason is only comparative, intuition is summative and creative. It agrees, therefore, with the more creative aspect of the psychology of woman. Reason and intuition are not to be regarded as either superior or inferior, but only as two different modes of perception and judgment. They represent psychological developments of a different order, intuition being more suited to the feminine function and reason to the masculine.

It is probable that intuition has never been appreciated at its true value, because in self-defence the importance of reason has been exaggerated, and because of the hereditary pattern of the male wish for aggressive superiority. The distinction has never been studied from the point of view of difference in educational methods. In spite of the recent social and economic freedom of women, it is probably true to say that they have not yet been psychologically discovered for what they really are. They are at present allowed to compete with men on more or less equal terms in many professions and in the government of the country. But the feminine sex will not really be discovered until such differences as there may be between them and the masculine are recognised, and suitable opportunities allowed for their development. In their escape from the hereditary pattern of inferiority feeling, women are at present trying to be just like men. They never were and never will be. They were not designed to compete on an equal footing with men in commerce and the professions, but to develop those qualities which they possess along lines associated with their own particular goal. It is perhaps due to the fact that they are competing in a reasoned, commercialised, mechanised, and mathematical world that women as a whole lack what is called "originality." They must inevitably have unnecessary defects as a sex, while they are forced to compete in an environment which is unsuitable to the development of their innate qualities.

Sex Acceptance and Adaptation.

In Adler's "Individual Psychology" it is stated that woman's goal is to be a man. This is a natural tendency of feminine psychopathology, where many women are struggling to overcome their feeling of inferiority by competing with the male, but it is the *wrong* goal. However, it is common in clinical experience to find cases of women who have adopted this pseudo-masculine rôle, usually to their ultimate grief and psychological confusion. The following case, who had the "powder-puff" dream (Lecture III., "Teleological dreams") is typical of many.

CASE T.—Woman; unmarried; headmistress; age 49.
Complained of: Extreme depression. Outbursts of crying. Occasional suicidal thoughts. Lack of concentration. No interest in her work. Frequency of micturition.
Appearance: Shy, severe and dressed in a rather masculine version of feminine attire.
History: Shortly before her birth her parents had lost an elder son, which had caused them great grief. One of her earliest memories was of being told by her parents how bitterly they were disappointed that she was not a boy. This made a very deep impression on her and she made up her mind that she would be a son to her parents. (This was not, of course, to please them, but to gratify her own desire to be wanted.) To a very large extent she succeeded. Although her parents were poor, she struggled her way up by means of examinations and scholarships and through her ability she managed to pass top in nearly every examination that she took. She said she always felt she simply must be top in all her exams; only to pass would be as bad as failure. Of the money that she earned she sent some to help to support her parents in their old age, but she always felt that her parents did not appreciate her and that her efforts were wasted on them. She was always unhappy during her vacations, which she always spent at home out of a sense of duty, and she said she could not help despising her parents. She had no use for men, and her life was entirely devoted to her work as a schoolmistress. She was afraid of walking alone in the country and would never go out by herself after dark because, she said, she was afraid of some man taking advantage of her.

In spite of her success, her work lost all its interest for her. She had several difficult homosexual attachments to women, but felt that she was insulted and ignored by those who attracted her. She had always suffered from frequency of micturition, being in the habit of passing her water sometimes every half hour, which had made her duties very difficult to perform. It transpired that this was a substitute form of erotic gratification, which rapidly improved during analysis.

The reverse type of case, of the man who wants to be a woman, also occurs fairly frequently. This is often associated with masochistic impulses, such as the wish to be bound or punished by a woman. The following case was the man who had the feminine handshake described in Lecture III.

CASE U.—Man; aged 47; married.
Complained of: Sexual impotence, loss of interest, and a feeling of uselessness.
History: He was a child of whom much was expected by his parents. He was the youngest of several brothers and sisters, with whom he had always felt it very difficult to compete. As a small boy at school he remembered wishing he was a girl, because he felt that girls had a much easier time. He was very reserved, and said that aggressiveness seemed to have been left out of his nature. His object in being a girl was that it presented an opportunity for escape from the difficulties of a competitive and unsympathetic existence.

When he grew up he continued to adopt the passive and submissive rôle, but nevertheless got on very well in his business career. His sex life, however, was deficient, consisting largely of exhibitionistic phantasies. He took such opportunities as offered for showing himself in a state of semi-nakedness to domestic servants and others, from which he derived considerable satisfaction. Whilst in bed he imagined that he was a woman and derived pleasure from fondling his own body.

At the age of 44 he married, but was sexually impotent. This was, however, psychological and not physiological, because he was always able to produce orgasm by auto-stimulation in relation to his own phantasies.

In such cases as these it will be realised that we are dealing with individuals in whom the psychological sexual component contains much that is both male and female. It is necessary for such patients that they should be helped to employ and develop those characteristics which they possess. The man who is submissive and intuitive need not, at least in time of peace, feel himself to be handicapped thereby. There are so many occupations in which he can fight in safety with pen and ink, and in which his intuition will stand him in good stead, that he need have no regrets. There are also many opportunities for the sublimation of a woman's competitive and aggressive feelings. The lives of these sexually mixed individuals may be more difficult, but they need to seek sublimation rather than repression. It is repression and unconscious defence mechanisms that cause psychological disorders. For instance, part at least of the cause of *depression*, which is such a common symptom amongst our patients, is frustrated wish-fulfilment. A woman who tries to be a man, or a man who tries to be a woman, must inevitably be disappointed and depressed.

Marriage Problems.

Many problems in life are due to the fact that we think people are what we want them to be. We are then disappointed when they turn out to be what they really are, which is something quite different. This is the cause of a great many of the difficulties which arise during marriage, when the intimacy of domestic contact proves the difference between reality and wish-fulfilment.

Another aspect of the psychopathology of marriage is due to the way in which the unconscious chooses what it wishes, quite independent of consciousness and reason. It is an axiom in psychology that *the symptom of which the patient complains may be unconsciously desired and psychologically useful.* This axiom applies also to marriage, and the partner may sometimes be classified as one of the patient's unconsciously desired symptoms.

CASE U (*continued*).—This man, who wished to be a woman, chose and was chosen in marriage by a woman who wanted to be a man. She was of a dominant aggressive type, a very capable business woman who was accustomed to her word being regarded as law. His unconscious wish was to be mastered and hers to be masterful. These wishes were mutually satisfied, but they found life in matrimonial partnership on a conscious plane both difficult and disappointing, and the man therefore applied for psychological treatment.

The possibilities for such complicated couplings are innumerable. The dominant male with sexual repression may marry a "blue-stocking," and the man with gonad deficiency may attempt to overcompensate by marrying a full-blown chorus-girl, in either case with results that may be disastrous on both sides. Similarly, the girl of potentially strong character, but repressed by a stern and patriarchal father and therefore afraid of the man who might be her normal mate, may choose in marriage a perpetual invalid, whom she is warned can never give her children. So the unconscious of each may choose, and within its limits may choose well, but it is a hard, inexorable master with scant consideration for domestic comfort.

Conclusion.

It is apparently one of the principles of Communism that every Communist should be able to do, at different times, everyone else's job. It would seem as if modern civilisation were tending towards the same principle, by trying to eliminate sexual differences in so far as physiological limitations will permit. The fallacy is a very important one, because it ignores essential and unalterabe differences. The happiness of each one of us depends on the degree to which we are able to express our own individuality in coöperation with the expressed individualities of others. In each of us there are so many points of difference, however much we may seem to be the same. One man is psychologically suited for one task, another for a different one. It is a cruel injustice to expect a man possessed of a psychology which is essentially creative, to perform a task which is uncreative and repetitive. It is just as cruel to expect another, who would be perfectly happy in a position free from responsibility, to undertake work beyond his capacity. How much greater is the injustice which is entailed by failing to recognise those psychological differences which distinguish the male and the female! They are, at present, still largely undiscovered, and the result would seem to be much unnecessary social and matrimonial unhappiness, disorder, *and ill-health*, in which the woman is liable to suffer the greater hardship. Perhaps, unless psychology steps in first, the pendulum will swing over towards the development of a compensatory matriarchal system, in which the superiority of women will be assured.

In the beginning the organism was a bisexual unit, but since that time procreation and matrimonial unity have been achieved through the coming together of two sexually differentiated individuals. The ideal of unity must be maintained, but it must be a unity in which both the man and the woman are free and independent individuals, finding their complementary "better halves" in each other. This cannot be achieved, however, until the essential individuality of each is given full freedom for its expression and development, so that they may become finally united in procreation, self-expression, and mutual esteem.

THE SERVICES

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lts. J. Stephen and H. M. Petty to be Surg. Lt. Comdrs.

Proby. Surg. Lt. (D) H. P. Buchanan to be Surg. Lt. (D).

Proby. Surg. Sub-Lt. R. H. Berry to be Surg. Sub-Lt.

ROYAL ARMY MEDICAL CORPS.

Maj. C. H. C. Byrne retires, receiving a gratuity.

Lt. J. H. Anderson to be Capt.

Lt. J. C. Gilroy is secd. for serv. under the Colonial Office.

Lt. (on prob.) J. M. Gibson, from the secd. list, is restd. to the estabt.

The undermentioned Lts. (on prob.) are confirmed in their rank: J. M. Gibson, W. A. Y. Knight, A. Guirdham, M. A. Rea, S. W. Smith, and J. M. Officer.

J. R. Tobin is granted a temp. commn. in the rank of Lt.

MILITIA.

Maj. C. V. Nicoll retires on attaining the age limit and retains the rank of Maj.

TERRITORIAL ARMY.

Lt. H. S. Davies resigns his commn.

ROYAL AIR FORCE.

Flying Officers G. W. Paton and P. J. McNally are promoted to the rank of Flight Lts.

SPECIAL ARTICLES

INSTITUTE FOR SURGICAL AND BIOLOGICAL RESEARCH.

MR. BUCKSTON BROWNE'S GIFT.

AT a meeting of the Council of the Royal College of Surgeons of England on Feb. 12th the following letter from Mr. G. Buckston Browne, F.R.C.S., was read :—

80, Wimpole Street,
Cavendish Square, W. 1.
4th February, 1931.

To the President and Council of the Royal College of Surgeons of England.

MY LORD AND GENTLEMEN,

I believe those who have added, or are adding, to the Science and Art of Surgery, to be the greatest of all benefactors to the human race, and to the domesticated animal kingdom. I therefore wish at the end of a long surgical life to do all I can to facilitate the labours of those willing to devote time to surgical observation and research.

I therefore ask you to grant me the great privilege of building and endowing an Institution of Surgical Biological Research in which surgeons, and particularly young surgeons, will have full opportunity for carrying out their investigations.

The institution I have in mind is in reality an extension of the scheme, which the Council has already established by the equipment of laboratories in direct connexion with the Great Museum of the College. I learn that the men now working in these laboratories are handicapped in their researches by the lack of a place where living animals can be studied. We all know that John Hunter had a farm at Earls Court, where from close observation of living animals, he was able to make his most important additions to surgical knowledge. It is such a farm that I wish the Royal College of Surgeons to accept from me.

I have lately acquired, established and endowed "Down House"; Darwin's home for forty years. I have handed over the house and land—some twenty-three acres—to the British Association for the Advancement of Science, to be preserved in perpetuity as a memorial. I have more recently bought an additional thirteen acres, actually adjoining the Darwin estate, and this land provides in my opinion an ideal site for a biological farm. This land I offer to the Royal College of Surgeons as a gift. It is just beyond the village of Downe (Farnborough, Kent), sixteen miles from Lincoln's Inn Fields, and can be reached in forty-five minutes. There is ample accommodation, and pasturage for animals, and its intimate association with Darwin should provide inspiration for those who desire to follow in the traditions of Hunter.

The size of building to be erected, its design and equipment, service and staff must await the reception extended by you to my proposal. In the meantime I would suggest a moderate beginning, just enough for present requirements. The needs of your laboratory workers should be met, and of those surgeons who are now seeking opportunities for testing inferences they have drawn concerning the nature of certain diseases from clinical observation. As further needs become evident, additions to the building can be made. At present I think the following provisions must be carried out.

1. To provide three or four laboratories where investigations can be made under the best conditions, or where living animals can be closely observed, and cared for.
2. Houses for animals.
3. Accommodation for the chief attendant—one skilled in laboratory methods.
4. Accommodation for a stockman to look after, and feed the animals.
5. Hostel accommodation for those working in the Institution, should they wish to carry on continuous work.

I understand that the detailed work of examining results will be carried out in the laboratories of the College in London, so that there will be no need to provide, and furnish, pathological laboratories at the Downe Institution.

In the preliminary stages at least the direction of the Institution should be entrusted to the Conservator of your Museum. He now spends his week ends, whenever possible, in a cottage on the Darwin estate, adjacent to the site proposed for the Institution.

I am prepared to give you £50,000, and I will add further sums from time to time until my gift, including the cost of the land, and such interest as may accrue from money lying in your hands, shall altogether amount to £100,000. If this sum be not reached before I die, I shall arrange that my estate makes good the balance due.

Believe me to be,
My Lord and Gentlemen,
Yours very faithfully,
(Signed) G. BUCKSTON BROWNE.

The Council unanimously adopted the following resolution: "That the Council hereby express their deep sense of Mr. Buckston Browne's great liberality, and, on behalf of the College, undertake to be responsible for the proposed Institution for Surgical Biological Research, subject to the settlement, under a Deed of Trust, of conditions satisfactory to the Council and to Mr. Buckston Browne."

MEDICINE AND THE LAW.

Hospital Sweepstakes and Ballots.

THE public is by this time aware that sweepstakes, even sweepstakes in aid of hospitals, are illegal in England because forbidden by the Lottery Acts. It is also aware that approved sweepstakes in aid of hospitals are temporarily legal in the Irish Free State by virtue of the Public Charitable Hospitals (Temporary Provisions) Act, 1930, passed in Dublin last June and remaining in force till July, 1934. The lawfulness of sweepstakes is thus a matter of geography. Two men were fined £25 apiece at Sheffield last week for selling tickets for one of the approved Free State sweepstakes. The Postmaster-General, presumably acting under Home Office warrant under Section 56 of the Post Office Act of 1908, intercepts letters addressed from England to Dublin by persons who want to take part in these Free State lotteries. It was stated officially in Parliament last year that 9000 letters were opened in connexion with the Free State sweepstake on the Manchester November handicap and nearly £7000 was returned to the senders. Clearly there are plenty of people in England who like their "flutter." A project to give them what they want by organising sweepstakes in the State of Andorra is said to have been vetoed by the high authorities of that country in the interests of morality. Another similar attempt is said to be in progress in the Free City of Danzig. Yet, though the public understands that what is lawful in Free States and Free Cities may not be lawful in England, it may still be puzzled. The London Stock Exchange has, to the great advantage of charities and without hindrance from the police, conducted a large "mutual subscription" for several years on the Derby; and at this very moment a "Radio Ballot" in aid of the voluntary hospitals, offering "a five-figure fortune for sixpence," is receiving full publicity in a London daily newspaper assisted by the British Broadcasting Corporation. Lord Lee's Commission on Police Powers used mild language when it reported that the provisions of the Gaming Acts as to lotteries and competitions for money prizes were exceedingly complicated and produced anomalous results. As the report pointed out, there is danger from the haphazard enforcement of laws which have not the whole-hearted support of public opinion.

In England, as is well known, the State used to conduct official lotteries until 1823, and many of the statutes against lotteries were passed to protect

this form of State enterprise from private competitors. If it is declared to be the law that all sweepstakes are illegal in England, the statement may be qualified in two ways. In the first place, all laws are not always enforced. The law against Sunday entertainments has been very far from enforced, we know, by the London County Council in the matter of cinema theatres. Nearly a year ago the Home Secretary explained to the House of Commons that he drew a distinction between sweepstakes that were private and those that were not private; the Stock Exchange sweepstake, he understood, was a strictly private affair confined to members; if so, he would not initiate action against it. In the second place, it may be possible to keep a lottery on the right side of the law by diluting the element of chance with an element of skill or judgment. Legally defined, a lottery is a distribution of prizes by lot or chance; but the distribution must be entirely by chance; if skill or judgment enters into the scheme, a competition will not be a lottery merely because chance also plays a part in it. Ever since the days of the "missing word" competitions the law-courts have been deciding the fate of particular instances. A prize for correctly predicting the number of births and deaths in a given area and period was obviously not a lottery. A prize for guessing the winners of horse-races was also held lawful. The "last line" and "limerick" competitions were held to be lotteries in 1908 when it was not clear that the prize was awarded on merit rather than according to fancy or some other temporary method of selection. But where the competitors are asked to arrange a number of items in an order selected upon a particular basis requiring the application of skill and judgment, then the competition may be redeemed from illegality. The winner may have made his or her selection at random and without the slightest thought; the organisers of the competition are likely to be safe. The excellence of the motive—for instance, the assistance of the voluntary hospitals—is legally immaterial, though it might affect the zeal of the police in prosecuting or the sternness of the magistrate in passing sentence.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

DICHOTOMY.

OUR consciences are pricking us. Perhaps they are more sensitive than they were. Or is it that the evil of dichotomy has of late assumed alarming proportions? At all events, this hardy perennial has been much in evidence of late, and the publicity it enjoys, or suffers, may perhaps lead to a more rational system of dealing with it. In a lecture at Bordeaux by Prof. P. Mauriac, whose audience was exclusively medical, the whole subject was ventilated with much candour. To show how old the problem is, the lecturer read a letter written in 1752 by a Dr. Gilibert of Montpellier, who deplored the greed and lack of scruples of certain doctors in this respect. Prof. Mauriac rather thought that in 1930 this evil was even greater. As for the predisposing causes, he was inclined to blame the overcrowding in the medical profession which has reached such a pitch that the doctor who is honest cannot always make a living from his profession. Hence the recommendation that the authorities should take the necessary measures to combat the overcrowding among doctors, the evil effects of which ought not to be borne by the patient. Such exhortations to the authorities are apt to fall on deaf ears or to be misunderstood by suspicious souls tempted to find in claims for limitation of the number of doctors a craving on their part for a sort of monopoly. Prof. Mauriac presented a questionaire, the first query of which ran: "Are you in favour of sharing fees?" He asked the following supplementary questions: "Are you in favour of dichotomy between physicians and surgeons alone, or also between them and specialists and laboratory workers, &c? Would you make it conditional on the presence of the physician at the operation? In what proportions should the fees be shares? Should the patient's family know the exact terms of the dichotomy, or only the fact of its existence?" As Prof. Mauriac pointed out there might be cases in which a commission of 5 per cent. was immoral, and others in which a commission of 50 per cent. might be legitimate. At all events the patient or his family ought to know where their money goes. If the general rule were to be adopted that no operation was to be decided on without the coöperation of the physician in charge, and that he was to attend at the operation, his claim to participate in the operation fees would be justified. The comprehensive fee then charged to the patient could legitimately include both that of the surgeon and that of the physician.

THIRTY-YEAR JUBILEE OF THE PASTEUR HOSPITAL.

Dr. Louis Martin of the Pasteur Institute recently gave an address in connexion with the thirtieth birthday of the hospital attached to the Pasteur Institute. It was built in order to provide in-patient treatment for cases of diphtheria. This qualification for admission was soon extended to all infectious diseases. Babies, children, and adults are all eligible for admission to the one-bed isolation wards, whose glass walls prevent their occupants from feeling completely cut off from the outer world. During its first 30 years this hospital has received 2516 patients suffering from diphtheria (mortality 6·95 per cent.). There were 2955 cases of non-diphtheritic sore-throat, 2902 cases of measles, 4810 cases of scarlatina (mortality 2·16 per cent.), 488 cases of typhoid fever (mortality 2·86 per cent.), and 550 cases of small-pox (mortality 18 per cent.). Dr. Martin insisted that the comparatively low mortality-rates of the Pasteur Hospital should be traced to the rigorous application of individual isolation, infection within the hospital being exceedingly rare. Even when the staff of the hospital was included in the comparison, the intramural infections were much less frequent than in other fever hospitals.

BUDAPEST.

(FROM OUR OWN CORRESPONDENT.)

CRITICAL POSITION OF SICKNESS INSURANCE.

THE adverse financial conditions prevailing all over Hungary are reflected in every institution dependent on public support. Workmen's insurance has been in serious difficulties for some months, and though the State agreed to cover all its liabilities up to the end of last year, none can foretell what will happen in 1931. It is quite certain that the deficit will be still higher, for the number of employers unable to pay the premiums is going to increase. On the other hand, the raising of the premiums in order to meet the deficits is at present impracticable. The Board of Directors can think of no solution save to reduce

costs of administration, first by dismissing some of the officials, and secondly by reducing the services offered to members. They argue that it is much better for employees to get a moderate supply of medical service, drugs, and sickness benefit, than to upset the equilibrium of the whole system. Another solution would be for the State to raise its contributions. But this borders on impossibility, for its revenues are steadily decreasing.

HORSE-FLESH IN HUNGARY.

A municipal horse-flesh works was established by the city of Budapest in 1905 with the object of securing cheap meat and sausages for the indigent population of the capital. The works has its own slaughter-house, equipped in the most modern way, its sausage factory and huge refrigerating plant, and also an installation for tinning horse-flesh. When the scheme was launched—at a time of general prosperity in Hungary—three shops were opened in the capital to sell the produce, but owing to the small demand two of these soon had to be closed. After the war the economic condition of mutilated Hungary became ever worse, and it was consequently necessary to increase the number of horse-flesh shops, so that at present there are several in every district of Budapest, the total number being 34. In 1906, the first complete business year, 3297 horses were slaughtered; in 1930 more than 10,000 horses have been consumed by the poor population of the city. Whereas 1 kilogramme of beef costs 1½ pengö (1*s*. 2*d*.), the same amount of horse-flesh costs 70–80 filléres (about 6*d*. or 7*d*.).

LAWSUITS AGAINST SURGEONS.

Of late it has become the fashion in Budapest to call surgeons to account for unsuccessful operations. The amounts claimed are often exceedingly large, and the motives of the litigants—who do not spare even the most eminent professors—are only too obvious. The economic depression in this country leads unscrupulous people to make money in any way they can, and matters have not been made any easier by the behaviour of one or two pusillanimous doctors who have settled unfair claims out of court rather than face publicity. Their action, although disastrous, is not perhaps to be wondered at when we consider the damage done to a practitioner by proceedings against him in the law courts, even if he wins.

The epidemic character of this litigation is best shown by the fact that in the last few months not less than 15 law suits have been launched against prominent members of the medical profession. The plaintiffs, in most cases, sue the doctors on poor right—that is to say, they pay no legal costs. Prof. Arnold Winternitz was sued by one Sigmond Weiss, a canvasser, for performing an operation on his wife which did not have the expected result. The patient had presented herself at St. John's Hospital complaining of epileptic fits, and was duly examined by Prof. A. Sarbó, who thought they were caused by depressio cranii, which might perhaps be healed by an operation. The patient agreed to the operation, but after it was performed her fits continued and she was bedridden for a long time. For this incapacity, and for what she called the superfluous discomfort and pain of the operation, she claimed monetary compensation. Prof. Winternitz contended at the trial that the operation offered her the only hope of recovery, and claimed that her condition had, in fact, improved considerably. The verdict has not yet been given.

In another case the daughter of a postal clerk was treated at St. Rochus Hospital for secondary syphilis. On her discharge she sued the city of Budapest for a considerable sum as an indemnity for having a rash on her body in consequence of the treatment employed. The rash, she said, would reduce her chance of marrying. At the hearing the incriminated doctor, having been absolved from the obligation of professional secrecy, asserted that the plaintiff suffered from severe secondary syphilis, which necessitated administration of a large quantity of 914. The course was started cautiously with small doses, but salvarsan dermatitis nevertheless developed—a complication which is unforeseen and cannot be prevented. The legal representative for the city of Budapest put the question: which is more detrimental to the chance of marriage, a slight dermatitis which may ultimately heal, or syphilis which left untreated for several months becomes so severe that its complete cure requires at least a couple of years?

As I have said already, the sums claimed in these law suits are usually very large, and not only a lump sum but also monthly payments are claimed. This is very inconvenient to the city of Budapest, for the legal costs are established by the court according to the substance of the suit, which in these cases runs very high owing to the annual payments claimed in some cases for life. As the High Court of Justice decided against the plaintiffs in similar cases aimed against the State Sickness Insurance office, it is quite certain that the present law suits also will be lost. But as the plaintiffs litigate as paupers, the costs fall on the city of Budapest.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

BOVINE TUBERCULOSIS.

On the advice of a special committee certain recommendations on bovine tuberculosis were adopted last week at the annual meeting of the Veterinary Medical Association of Ireland. The committee advised that tuberculosis in cattle was so widespread that wholesale eradication could not at the moment be expected. Nevertheless, steps could be taken immediately which would steadily diminish the incidence of the disease, and lead ultimately to complete eradication. These were:—

1. Widening of the scope of the Bovine Tuberculosis Order of 1926, in order to ensure the early detection and removal of as many clinical cases as possible, the Order to include the following provisions: (*a*) the removal of all cases excreting tubercle bacilli; (*b*) periodical veterinary inspection of all dairy cows; (*c*) the use of the biological test for mixed milk, so far as that is practicable, and for the purpose of supplementing the work of veterinary inspection.

2. Effective pasteurisation or sterilisation of separated milk at creameries before it is returned to farmers for feeding to calves and pigs. In this way the incidence of the disease in pigs, and probably in calves, might be reduced.

3. Education of the farmer and general public to obtain their coöperation and support in any scheme of eradication. The public must be made to recognise the necessity for demanding tubercle-free milk and meat. It must be demonstrated to the farmer that it is to his advantage to have the disease eradicated, and this can best be done by the official grading of milk.

4. Legislation to give effect to the recommendations of the Inter-Departmental Committee. The recommendations include the "grading of milk," the "accredited herd system," and the "area eradication system."

Legislation dealing with bovine tuberculosis and the milk-supply was outlined by the Minister for

Local Government and Public Health several months ago, but has not yet been pressed forward. It is to be hoped that the action of the Veterinary Medical Association may act as a stimulus to the Government.

ROYAL COLLEGE OF SURGEONS IN IRELAND.

The annual dinner of the President and Fellows was held in the hall of the College last week, with Mr. R. Atkinson Stoney, the President, presiding. The company numbered over 120, including Mr. James McNeill, Governor-General of the Free State. The President, proposing the toast of "The Governor General and Prosperity to Ireland," referred to the steady prosperity of the College, and its increasing number of students. He spoke of the importance of the activities of the students themselves in their several clubs and societies, and stated that it was the wish of the authorities of the College to encourage such activities. An Officers' Training Corps was soon to be started. He further referred to the hospitals sweepstakes, and prophesied that their success would greatly increase the power for good of the hospitals. The Governor-General, in his reply, also alluded to the sweepstakes, and expressed the hope that those hospitals which benefited thereby would secure more and better work, while those hospitals which declined to take advantage of the sweepstakes should not be allowed to suffer by loss of subscriptions. The possibilities of sweepstakes should not alone govern the attitude of the public toward hospitals. He referred to the steadily increasing prosperity of the Irish Free State, slowed down, perhaps, but not stopped by the world-wide economic stress. Other speakers were the Vice-President of the College (Mr. F. C. Crawley), the Minister for Justice (Mr. FitzGerald Kenney), the Provost of Trinity College (Dr. E. J. Gwynn), and the President of the Royal College of Physicians of Ireland (Dr. T. G. Moorhead).

Dr. Geoffrey Bewley has been appointed to the chair of preventive and forensic medicine in the schools of the Royal College of Surgeons in Ireland. Dr. Bewley is one of the Physicians to the Adelaide Hospital, and had the distinction, seven years ago, of being the only man to hold at the same time the Fellowship of the two Royal Colleges of Ireland, for up almost to the time of his admission as a Fellow of the Royal College of Physicians of Ireland, that College refused admission to any Fellow of any College of Surgeons so long as he held such Fellowship.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

SCOTTISH HOSPITAL POLICY.

THE managers of the Glasgow Royal Infirmary have begun the erection at Canniesburn of an auxiliary hospital, the funds in hand amounting to nearly £100,000. Dr. Parlane Kinloch, chief medical officer of the Department of Health for Scotland, says that the scheme well illustrates the Scottish application of modern ideas in hospital development. In the first place the whole weight of informed opinion is being compelled towards a regional development. This envisages our teaching hospitals in the four university cities of Scotland as great casualty-clearing stations and hospitals for emergency surgery and medicine. They will serve and supply a whole ring of modern hospitals in the environs of these cities so that the vital requirements of modern medicine—fresh air, sunshine, and open-air treatment—will be available to the fullest extent. In the second place the plans of the Canniesburn hospital not only meet the fundamental requirements of Scottish hospital architecture, but incorporate a whole range of new devices for administration and service. Whereas European hospital design is of the "horizontal" type, with a maximum provision of verandah accommodation for sunlight and fresh air, the typical American "vertical" design was evolved to counteract extremes of climate by means of artificial ventilation, and to allow the highest degree of mechanisation so as to reduce labour costs to a minimum. The International Hospital Congress of 1929, held in America, came to the conclusion, however, that there is no medical sanction for recommending the adoption of the vertical type in Europe.

The directors propose to provide paying wards and these will be made available and maintained under a mutual hospital insurance scheme. The voluntary and statutory hospitals, said Dr. Kinloch, must increasingly meet the hospital requirements of the section of the population within the ambit of National Health Insurance. The wealthy would continue to make their own arrangements for hospital services, and with the development of a Mutual Hospital Insurance Service, he sees the beginning of a really adequate hospital service for Scotland.

CONTINUITY OF FAMILY SERVICE.

Dr. John M. Cowan, honorary physician to His Majesty the King, is retiring from the active staff of the Glasgow Royal Infirmary and is joining the consulting staff. In presenting a silver ink bottle, pen tray, pen and pencil, for use in the board room, he said that his family association with the infirmary was spread over 134 years, his father, grandfather, and great-grandfather having been physicians on the staff. His great-grandfather was appointed within two years of the infirmary's foundation. He added that in 1796 there had been 402 in-patients treated; 2311 in 1824; 3651 in 1861; 8448 in 1906; and 17,391 in 1930.

REACTORS IN INFECTED CATTLE.

In a bulletin issued by the Hannah Dairy Research Institute Mr. Fowler and Dr. Norman Wright give some interesting facts of the incidence of reactors in tuberculin-tested (licensed) herds in Scotland. Over the six-year period, 1923 to 1929, 28,221 official tests were recorded and 428 reactors found. The average proportion of reactors was, therefore, 1·52, representing a loss of three reactors per 100 head of milking stock per year. An examination of the number of reactors at successive six-monthly official tests showed that the loss during the first year amounted to five reactors per 100 head, falling to one reactor per 100 head by the fifth and sixth years. As to the possible infection of the milk-supply, it is shown that not more than 3 in every 10,000 animals in such herds can be considered as actively dangerous. If calculated on the 1928 cow population, this indicates that there is each year not more than one dangerously infected animal among the whole of the licensed tuberculin-tested herds in Scotland.

The sources of infection yield some interesting facts. In the histories of the 462 reactors, the source of infection was as follows:—

Infected bought-in stock, 34 per cent.; infection through contact with other reactors or untested stock, 24·5 per cent.; infection from contaminated premises or pastures, 11·5 per cent.; miscellaneous and multiple sources of infection, 19·25 per cent.; anomalous tuberculin tests, 4·5 per cent.;

source of infection not traced, 6·25 per cent. Less than 10 per cent. of the reactors contracted infection from sources beyond the control of the owner of the herd. The remaining 90 per cent. were avoidable if due precautions had been taken.

This is a valuable investigation from the standpoint of public health. On the basis of the results many practical recommendations are made.

UNITED STATES OF AMERICA.

(FROM AN OCCASIONAL CORRESPONDENT.)

SUPERVISION OF PREGNANCY.

THE Maternity Centre Association have been promoting prenatal care in New York City since 1922. It is their object to bring pregnant women under medical supervision as early as possible and to support this by nursing care, which includes instruction in the hygiene of pregnancy and the preparations needed for parturition and early infant care. They also consider it among their responsibilities to see that their clients are transferred to other hands when they have passed the crisis. During the last eight years 4726 pregnant women have been under the care of the association. Only 28 per cent. of these came under observation before the fifth month of pregnancy; 85 per cent. had registered before the completion of the seventh month; 2 per cent. did not come under care until the last month of pregnancy. During the 8-year period no woman under care died before delivery. Puerperal deaths totalled 11, or 2·2 per 1000 live births, which is about one-third of the maternal mortality of the district in which this work was done (Bellevue-Yorkville district). There were 123 stillbirths—a rate of 26 per 1000 births as compared with a general rate of 50 per 1000 births for the white population of New York. Deaths in the first month of life amounted to 132, of which 50 were in premature infants. Here the rate of 28·7 per 1000 live births compares with a rate of 30 for the city and 42·9 for the district.

Although these figures indicate that a saving of maternal and infant deaths is practicable by prenatal care, analysis of the causes of death shows that further improvement is possible. There are still deaths from causes which should be preventable—e.g., 4 of the 11 maternal deaths were due to septicæmia and 17 deaths of infants were attributed to birth injuries.

An attempt to raise the standards of obstetric practice in this country is being made by the newly formed American Board of Obstetrics and Gynecology, composed of nine members and examiners elected by the American Association of Obstetricians, Gynecologists and Abdominal Surgeons, the American Gynecological Society and the Obstetrics section of the American Medical Association. Although not finally formed until Sept. 16th, 1930,

This Board, it is stated, has been in the process of organisation since 1927. It puts into action a determined effort on the part of these three national organisations to improve the standards of practice of obstetrics and gynecology. It expects to accomplish this by various activities, such as the investigation add encouragement of graduate extension study facilities and active clinical assistantships for men desiring to specialise in these branches, and it will endeavour by regular examinations to determine the competence of specialists in obstetrics and gynecology who apply for the certificate. Certain outstanding specialists will be granted certificates on the basis of their attainments alone, but only by a vote of the entire Board after recommendation by the Committee on Requirements. A second group is asked to undergo a practical clinical examination, whereas a third and younger group has both written and clinical examination and must submit records of a group of cases in order to qualify.

The first examination will be held simultaneously in 19 different cities of Canada and the United States on March 14th.

POST-GRADUATE WORK IN NEW YORK CITY.

An announcement was made recently of the affiliation of the New York Post-Graduate School and Hospital with Columbia University, by Dr. Arthur Chace, President of the former institution, at the annual dinner of its Faculty Association. The Post-Graduate School is the pioneer institution of its kind in America, while the University occupies a high position as a teaching centre of a most cosmopolitan kind. Now that the new medical centre of the University, with its amalgamated hospitals and its hostel for medical students provides within a comparatively small area ample facilities for research and clinical work, the affiliation with the Post-Graduate School gains significance. For New York, with its immense population made up of peoples drawn from all parts of the world, furnishes a supply of human material suffering from a limitless variety of diseases. The New York Post-Graduate Medical School and Hospital, although the idea was conceived in 1875, did not come into existence until 1882, when during the intervening years it was found impracticable to teach medical undergraduates and graduates in the same classes. The pioneers of the movement requested that graduate teaching in medicine be provided in a separate building, and when their request was refused, they resigned and organised the existing post-graduate medical school, their object being "not to make more doctors, but to improve those we have." The school became very successful, having a hospital of 416 beds, as an integral part of its institution, for the lesson learned so slowly in London that such a hospital was necessary to the carrying through of a post-graduate scheme was clear half a century ago to many thinkers in New York.

Under the arrangement which becomes effective on July 1st next, the trustees of the New York Medical School and Hospital will remain entirely responsible for the financial conduct of the scheme, while the educational work will be under the control of Columbia University. It may be pointed out that the whole field of study in clinical medicine at Columbia University is very extensive, as it will be carried on not only at the medical centre, and, now, at the New York Post-Graduate Medical School and Hospital, but as previously at St. Luke's Hospital, at Mount Sinai Hospital, at the Montefiore Home, and other institutions (see THE LANCET, 1929, vol. i., Special Supplement, p. x.). The affiliation must be of great practical value to many medical men, and it is fitting that the pioneer post-graduate medical school in America should take the initiative in the matter.

AN UNEXPLAINED MILIARY DISEASE OF THE LUNGS.

In the spring of 1927 the U.S. Bureau of Mines, in conjunction with two private associations, undertook to establish a clinic at Picher, Oklahoma, for the study and control of silicosis and tuberculosis among the miners. By the end of 1929, 18,285 people had been examined. Quite early in the work an occasional case of what was radiographically a miliary tuberculosis was found. However, in many cases there was almost no history to suggest tuberculosis and in all but two cases the patients were apparently healthy. In some cases the men had not yet begun to work or had been at work in the mines for a few days only.

Altogether 125 cases of this unknown miliary disease were discovered. Summarised case-histories of each of these are now reported [1] with a discussion of the findings. The pictures are said to differ radically from those of pneumonoconiosis in which lineal markings are more clear-cut. If the disease is miliary tuberculosis, then our conception of the latter condition must be revised for none of the 125 has died. In the 85 cases in which sputum was examined tubercle bacilli were found in two only. The condition may be produced by fungus infection. The authors believe that it is identical with the miliary calcification described by Sutherland.[2]

[1] Sayers, R. R., and Meriwether, F. V.: Miliary Lung Disease Due to Unknown Cause, U.S. Pub. Health Rep., 1930, xlv., 2994.

[2] Sutherland, E. G.: Miliary Calcification of the Lung. Med. Clin. N. America, 1925, viii., No. 4.

PUBLIC HEALTH SERVICES

LOCAL AUTHORITIES AND ADVICE ON BIRTH CONTROL.

CIRCULAR 153/M.C.W., issued by the Ministry of Health last July, requested local authorities to make provision for instruction in birth control for married expectant or nursing mothers in whom further pregnancy would be detrimental to health. In this circular it was stated that, in the view of the Government, it is not the function of child welfare and antenatal centres to give advice on birth control, inasmuch as their use for such a purpose might damage the proper work of the centre; but local authorities have power to give advice to certain groups of women under conditions set out in the circular.

MANCHESTER.

Dr. R. Veitch Clark has told the Manchester City Council that advice to practise birth control is valueless without clinical instruction, but he adds that the establishment of a birth control clinic at any of the existing centres would, in the present state of public opinion, be highly undesirable. The service given to maternity in Manchester must not, he says, be injured by exposure to adverse criticism, even though such criticism may be uninformed. Dr. Clark's recommendation is to provide instruction in birth control as part of the routine work in the obstetric and gynæcological departments of the Crumpsall and Withington Hospitals. This has certain advantages. Women for whom contraception is medically advisable frequently suffer from gynæcological conditions which require treatment, and to provide facilities at such a department would not stamp it definitely as a birth control clinic. The work would, he thinks, contribute to the lessening of maternal morbidity in the city. Medical opinion, he admits, is not at present satisfied either as to the harmlessness of the continued use of contraceptives on the individual or as to their success in preventing conception. It should not therefore be suggested that such methods have more than a reasonable chance of success.

BIRMINGHAM.

Dr. H. P. Newsholme in a report to the Birmingham City Council lays stress on the fact that it is only permissible for local authorities to give advice on birth control in cases where further pregnancy would be detrimental to health. The Ministry does not define what is meant by "detrimental to health," and it is manifestly impossible to draw a hard-and-fast line between health reasons and social reasons. Some medical officers, he thinks, would feel justified in regarding a large or a young family living on a small income as providing circumstances which would cause a further pregnancy to be detrimental to health. Other medical officers would not. The memorandum of the Ministry makes no reference to the husband, and he quotes with approval Canon Lyttelton's remark: "The broad fact remains that abstinence is possible except to those who keep on saying it is not." He thus reaches the position that while birth control may be necessary from time to time, and at a certain stage permanently, there are grave risks of degradation from the careless or unthinking use of mechanical methods, which makes it undesirable to lend them the weight of public authority. He lays stress also on the fear of conception that must persist when any method of contraception is used which is not free from risk of failure. The true course would be to imbue the community with the knowledge that self-restraint is the standard; advice on contraception would in itself almost inevitably weaken the resolution towards self-restraint. For medical officers who take a different view, reference can be made to a practitioner or a hospital (including the voluntary birth control clinic) for particular advice. Dr. Newsholme doubts whether under present circumstances it is practicable to give systematic instruction in methods of self-restraint; the first step towards making it possible to do so is for the simpler alternative of contraception to be rejected. If such advice were feasible it would cover:

(*a*) Practical measures to minimise the incitement to physical association.

(*b*) Encouragement of points of contact and of mutual interests at other levels of life; removal of incomplete understanding or reticences which limit contact at such levels and thereby emphasise need for contact at the physical level.

(*c*) Help in gaining new lines of interest capable of utilising the energies of both in fresh directions, allowing the individual to "sublimate" the sex impulse.

(*d*) Assistance in removal of factors of discouragement, lack of interest or loss of idealism which encourage overstressing of the purely physical relation.

The voluntary birth control clinic, which was opened in April, 1927, at 9, Castle-street, Birmingham, has recorded 5500 attendances at a cost of £2000, collected by private subscription. The committee of the clinic, which includes Dr. M. Hamblin Smith, Dr. H. F. Humphreys, Dr. E. C. Macirone, and Dr. D. M. Sandilands, has decided that in view of Dr. Newsholme's report the clinic must continue to shoulder the responsibility for instruction on birth control in Birmingham.

RECRUDESCENCE OF CEREBRO-SPINAL FEVER.

IN many parts of the world there have recently been indications of increased prevalence of cerebro-spinal fever. The incidence in the United States, for example, has risen from 1859 cases in 1925 to 9660 cases in 1929. In 1929 when there was prevalence above the average in England and Wales the total

cases were 650. In the same year there was a sharp epidemic in Glasgow, where 134 cases occurred with 112 deaths, a case-mortality of 83·6 per cent.[1] In recent weeks there has been an increase in the notification of cases, the totals in England and Wales being for the week ending Jan. 3rd, 19; Jan. 10th, 26; Jan. 17th, 29; Jan. 24th, 20; Jan. 31st, 27; and Feb. 7th, 48. Local outbreaks have occurred in the West Riding of Yorkshire, especially at Thorne and Maltby; in the latter place 17 cases have been notified. The local influenza prevalence in certain Army and Air Force units has been associated also with the occurrence of a small number of cases of cerebro-spinal fever. Thus since Jan. 1st, 1931, 10 cases have been notified in the Aldershot Command, five in the Eastern Command, and six among the personnel of the Royal Air Force at Uxbridge. At Aldershot, with the exception of one fatal case in a nurse who was nursing the patients with the disease, all the cases have occurred in men who have had influenza; they belong to various units and do not come from any one regiment or building. The epidemiological sequence of the cases generally has been of the usual kind—that is to say, they have been scattered and have occurred at the period of greatest prevalence.

ENTERIC FEVER IN ESSEX.

THE total number of known cases of paratyphoid occurring in Essex between Feb. 1st and 14th has been 172, the districts mainly affected being Epping Urban, Epping Rural, Loughton Urban and the Borough of Walthamstow. The infecting organism has been paratyphoid B. The illness in many cases has been severe but the fatality has been relatively low and only four deaths have occurred up to the present time. By arrangement with the London County Council, most of the patients have been treated in that Council's infectious diseases hospitals, but others have been admitted to the London Fever Hospital, the Connaught Hospital at Walthamstow, and the Ilford Isolation Hospital.

Inquiries made by Dr. W. V. Shaw, a medical officer of the Ministry of Health, in consultation with the medical officers of health of the county and of the districts concerned, appear to have shown that the origin of the epidemic was the infection of a particular milk supply at a dairy farm in the Epping Rural District. The infection seems to have been introduced by one of the employees on the farm, who, unknown to himself, was suffering from a mild attack of paratyphoid while at work handling the milk before its distribution. For several days the milk thus infected was consumed by a considerable number of persons in surrounding districts, some of whom have suffered from the disease.

At the farm in question all the employees have been examined and all those suspected of possibly carrying infection, including the man considered to have been the source of infection, have been removed to hospital and their place at the farm taken by other workers kept under close medical supervision. The distribution of milk from the farm was discontinued for the time necessary for the premises, milk utensils, etc., to be thoroughly cleansed and disinfected to the satisfaction of the medical officer of health, and in the view of the Ministry of Health there is now no reason to apprehend further infection of the milk at this farm.

[1] See THE LANCET, Jan. 24th, 1931, p. 199.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED FEB. 7TH, 1931.

Notifications.—The following cases of infectious disease were notified during the week:—Small-pox, 213 (last week 286); scarlet fever, 1683; diphtheria, 1316; enteric fever, 44; pneumonia, 2295; puerperal fever, 48; puerperal pyrexia, 127; cerebro-spinal fever, 48; acute poliomyelitis, 8; encephalitis lethargica, 16; continued fever, 1; dysentery, 20; ophthalmia neonatorum, 92. No case of cholera, plague, or typhus fever was notified during the week.

The 48 cases of cerebro-spinal fever were notified from the following 14 counties: London, 9 (scattered over 6 boroughs); Cumberland, 1 (Cockermouth); Devon, 1 (Plymouth); Durham, 1 (Sunderland); Essex, 3 (West Ham 1, Ilford 2); Hertford, 1 (Hitchin); Lancaster, 11 (Liverpool 4, Accrington 1, Farnworth 2, Horwich 1, Little Hulton 1, Swinton and Pendlebury 2); Northumberland, 2 (Newcastle-on-Tyne); Southampton, 2 (Portsmouth); Stafford, 1 (Coseley); Sussex West, 2 (Shoreham 1, Horsham 1); Yorks, West Riding, 12 (Barnsley 3, Conisbrough 1, Maltby 5, Doncaster 1, Handsworth 1, Knaresborough 1); Glamorgan, 1 (Cardiff); Monmouth, 1 (Newport).

The number of cases in the Infectious Hospitals of the London County Council on Feb. 10th–11th was as follows: Small-pox, 206 under treatment (last week 250 under treatment and 2 under observation); scarlet fever, 1545; diphtheria, 1929; enteric fever, 35; measles, 112; whooping-cough, 260; puerperal fever, 30 (plus 10 babies); encephalitis lethargica, 120; poliomyelitis, 3; "other diseases" 113. At St. Margaret's Hospital there were 7 babies (plus 3 mothers) with ophthalmia neonatorum.

Deaths.—In the aggregate of great towns, including London, there was no death from small-pox, 4 (2) from enteric fever, 72 (1) from measles, 7 (1) from scarlet fever, 49 (11) from whooping-cough, 50 (9) from diphtheria, 45 (11) from diarrhœa and enteritis under two years, and 331 (97) from influenza. The figures in parentheses are those for London itself. Five deaths from meningococcal meningitis occurred in London, one of them in age-group 15–25.

The fatal cases of enteric fever outside London occurred at Manchester and Halifax. Twenty-six fatal cases of measles were reported from Liverpool, 12 from Newcastle-on-Tyne, 6 from Hull, and 4 each from Bristol and Birmingham. West Ham and Blackburn each reported 4 deaths from whooping-cough, Southampton, Gloucester, Liverpool each 3. Diphtheria claimed 7 victims at Liverpool, 3 at Leeds. Diarrhœa was credited with 6 deaths at Manchester and 5 at Sheffield. The 234 fatal cases of influenza outside London are scattered over 75 great towns: 25 were reported from Liverpool, 9 from Plymouth, 8 from Sunderland and Newcastle-on-Tyne, 7 each from Leicester, Birkenhead, and Bolton, 6 each from Croydon, Birmingham, Preston, and Middlesbrough.

The number of stillbirths notified during the week was 244 (corresponding to a rate of 37 per 1000 births), including 33 in London.

POST-GRADUATE COURSES AT NEWCASTLE.—It is announced in our advertisement columns that post-graduate courses in many different subjects have been arranged in the University of Durham College of Medicine, Newcastle-upon-Tyne. A general course in medicine and surgery will be held from April to June, and a fortnight's intensive course in September. Syllabuses may be had from the registrar of the College.

POST-GRADUATE WORK IN MANCHESTER.—Manchester is to be busy with post-graduate teaching for the next few months, for courses are being held or to be held at no fewer than four of the bigger hospitals. These are: at the Royal Infirmary, Feb. 24th to May 15th (Tuesdays and Fridays), at St. Mary's Hospitals, Feb. 13th to March 20th (Fridays), at Ancoats Hospital, Feb. 26th to April 16th (Thursdays), and at The Victoria Memorial Jewish Hospital, March 4th to May 20th (Wednesdays). The time of all of them is about 4.15 P.M. and no fee is asked. At St. Mary's there are to be demonstrations in antenatal work, and lectures on children's diseases; at the other hospitals the subjects are concerned with general and special medicine and surgery. In addition Ancoats Hospital has clinical teaching every Thursday in term time from 11 A.M. onwards.

CORRESPONDENCE

PROPAGANDA AND MEDICINE.

To the Editor of THE LANCET.

SIR,—As one who has during three years been engaged almost solely in this work, and has addressed over 600 popular audiences in all parts of Great Britain, may I join in the discussion which your leading article on propaganda will evoke?

Those who fear modern efforts towards popular education in health appear to think that the public are quite incurious about themselves and their illnesses. If humanity were in a state of primal innocence regarding disease, there would be some justification for not disturbing so healthy a condition. But in the modern world, where advertisement and assertions are confused with truth and research, this is not the attitude of mind of a great majority of patients. They have formed theories upon their illness, they have consulted friends and popular manuals, and the physician has not only to deal with the disease but the patient's notion of what treatment he ought to have. When treatment involves residence in an institution, an operation or some severe dislocation of the normal life, the pathological condition recedes, and the adventitious circumstances of the patient's views remain to embarrass the doctor. Until recent years the ordinary person has had little opportunity of obtaining authoritative teaching which will help him to form a correct opinion when the need comes. Health propaganda has arisen not to create an aura of symptomatology, but to answer an immense interrogation in the public mind. These doubts and difficulties are not found only among the poor. In my view there is an even greater field for well-directed propaganda among the educated. More and more medical affairs are being directed by committees of lay people who have sometimes not had the opportunity of forming unprejudiced notions upon the important questions which they have to decide.

Whether fear is a weapon serviceable in the campaign against cancer, I am not competent to express an opinion. But in tuberculosis propaganda its utility has long since passed away. The fact that popular teaching on this subject was started 23 years ago may help to explain this. In the lectures organised by the National Association for the Prevention of Tuberculosis an effort is made to make the accent positive rather than negative; upon the promotion of health rather than the avoidance of disease.

It is my opinion that the need for accurate, moderate, and intelligible health propaganda will increase, and that, if directed by responsible persons with medical knowledge, it will assist invaluably in meeting the vast tide of unhealthy influences around us.

I am, Sir, yours faithfully,

HARLEY WILLIAMS, M.D., D.P.H.

Tavistock House North, Tavistock-square, W.C.1,
Feb. 16th, 1931.

BARBITURATES AS BASAL HYPNOTICS.

To the Editor of THE LANCET.

SIR,—May I add a word to the interesting paper on nembutal by Dr. Magill in THE LANCET of Jan. 10th? It was largely through Dr. Magill that my interest in nembutal was aroused and I can unhesitatingly endorse his conclusions.

About four years ago somnifeine was suggested to me as a pre-anæsthetic hypnotic, and when administered intravenously its effect was very much the same as that produced by nembutal. Reports as to its safety were, however, not reassuring, and the death of some animals to which it was administered in the research department of the Cancer Hospital caused me to abandon its use after four cases.

Some 18 months ago I first gave luminal by the mouth for pre-anæsthetic medication, and generally (especially when combined with small doses of morphine) the results were good, although its effects varied in different patients. With the advent of the intravenous administration of the more rapidly acting barbiturates the whole matter seems to have been put on an exact basis. As a basal, pre-anæsthetic hypnotic I have administered nembutal intravenously in 108 cases, amytal in 40 cases, and pernocton in 18 cases. There is no doubt in my mind that nembutal is the best of the three drugs. In the majority of the cases there was a fall in the systolic blood pressure of 10–15 mm., whereas with amytal the fall was usually about double this amount. In one case to whom I gave 1–2 g. (and obtained complete anæsthesia) the systolic blood pressure dropped 70 points within five minutes, and within one hour's time was 85 mm. lower than before the administration of the amytal. Generally speaking, patients do not appear to keep quite so fit and are more liable to sweat than with nembutal. Post-operative restlessness is decidedly more marked. With pernocton results were not so good; several patients vomited soon after having it, and one had a rigor. The production of unconsciousness is not so rapid, hence the necessity for very slow administration. This combined with the smaller volume of liquid make it difficult to administer.

As with most hypnotics the action of the barbiturates can be greatly increased by the simultaneous administration of small doses of morphine. There is a longer period of insensibility and the respiratory centre often becomes somewhat depressed at the same time. For several very toxic cases of exophthalmic goitre nembutal combined with morphine and hyoscine have given most satisfactory results; also as a preliminary to spinal anæsthesia it is extremely valuable. In nearly every case much less anæsthetic is required to produce relaxation, but I have not spared ether when necessary, and I have not had a single patient vomit after nembutal.

In general medicine (as apart from anæsthetics) the barbiturates appear to have a large field of use. I have used nembutal for insomnia with good results, but its effects are not as lasting as those of medinal. In one case—a man with intractable insomnia after bouts of alcoholism—I was able to produce five and a half hours' peaceful sleep with grs. 4½ of nembutal given by the mouth, where previously grs. 60 of potassium bromide and grs. 30 of chloral had given him less than two hours' restless sleep. Restlessness, when it occurred, I treated by bromide and chloral given per rectum, and in one case with paraldehyde. Caffeine sodium benzoate is said to be an antidote for the barbiturates. I have given it subcutaneously and intravenously, but was disappointed with its action. It seems rational to treat restlessness by bringing the patient quickly out of the influence of the barbiturate and then substituting another hypnotic. Thyroxine, which increases the metabolic rate, appears to do this more rapidly than caffeine sodium benzoate.

Innovations are usually productive of scepticism; the present use of the barbiturates will doubtless prove no exception, and they may act as scapegoat for many untoward happenings before their usefulness is fully established.

I am, Sir, yours faithfully,

STANLEY ROWBOTHAM.

Wimpole-street, W., Feb. 14th, 1931.

SEX DETERMINATION.

To the Editor of THE LANCET.

SIR,—It may be of comparative interest to know that in the case of the cow, service at the first, third, fifth, &c., œstrum following parturition results (if conception takes place) in progeny of the opposite sex to that of the preceding pregnancy, and that service at the second, fourth, sixth, &c., œstrum results in progeny of the same sex. One well-known local estate agent has compiled records from herds which he has known for some years, and the correctness of this statement is startling. In cases where it appears to fail one can usually find that either the cow was not served at that particular œstrum, or was served but did not conceive.

It may also interest workers in human sterility to know that I have found extract of corpus luteum successful in stopping premature births in bitches, and cutting short what appeared to be a serious epidemic in kennels.—I am, Sir, yours faithfully.

J. F. D. TUTT, M.R.C.V.S.

Winchester, Feb. 14th, 1931.

To the Editor of THE LANCET.

SIR,—Major Williamson quotes me as inferring that "children conceived before the tenth day after the beginning of a period may be of either sex." This is erroneous, because in a normal woman one month is fruitful to both sexes, the other is blank, or entirely fruitless. In the fruitful month any day from the third to the sixteenth (from the beginning of period) may be productive of male issue only; the days from the tenth to the sixteenth being the most likely. The Mendelian theory presupposes the sex of a child to depend wholly on the number of chromosomes in the fertilising spermatozoon. Even if this be so in part, the ovum must still remain the predetermining factor; according to her menstrual cycle, the female will invariably select the larger or smaller cell to fulfil her requirements. In other words, she will, as Mr. Huxley puts it, "let in one or the other kind of sperm at will, or rather according to physiological state. . . ."

I am, Sir, yours faithfully,

CICELY G. ERSKINE.

Eccleston-square, S.W., Feb. 16th, 1931.

A SUGGESTED CAUSE OF NEPHROSIS.

To the Editor of THE LANCET.

SIR,—I was interested in Dr. Bruce's letter. I should have thought the sudden development of œdema of the face and feet, accompanied by a feeling of lassitude but with no other symptom, as met with in the trenches during the war, was rather against the idea that nephrosis may be purely or in any way bacterial in origin. The occurrence of this syndrome, also insidiously in late pregnancy, in women up to the attack perfectly well, also opposes it. Even in scarlet fever the development of this syndrome—again in the same insidious manner—usually (always, I think) at a period when the virus of the original disease (so I understand) has completely disappeared from the system supports my criticism. The presence of albumin and of hyaline and granular tube-casts in the urine does not necessarily indicate a degenerative change in the kidney due to bacteria or to their toxins; such changes occur in healthy althletes after rowing a race. Nor is the presence of leucocytes or of cocci convincing. That an autogenous vaccine, used in acute cases, the patients being put to bed and dieted, should have been proved most satisfactory is not surprising either. Dr. Bruce fails to give us the result of a control series in which treatment (of two months' duration) identical in all except the supposed curative agent was applied. Is not a two months' treatment with a water diet in the early stages, apart from any vaccine, followed by a large percentage of cures? In the pre-eclamptic toxæmia it works almost every time.

There is another possible explanation of nephrosis, more reasonable than that of the bacterial or toxæmic, to which I invite Dr. Bruce's attention. It is that a turgescence of the renal medulla (by blood) occurs, blocking by its pressure the uriniferous tubules, thus leading to a distension of the cortex (by urine in tubules and glomeruli) and thus to an anæmia, relative or absolute of the part, with consequent and inevitable degenerative changes. It is an interesting conception, supported by much evidence. It arose from a study of the renal condition in eclamptic states,[1] but seems applicable to states outside pregnancy. It has long been known that exposure to cold may usher in an attack of "nephritis"; it is not unreasonable to suppose that a general constriction of cutaneous arterioles induced by exposure to cold reflexly produces a congestion of internal parts. In trench warfare, therefore, a congestion of internal parts may be expected. It requires sifting the evidence and a long argument to show that the renal medulla is likely to be especially affected—but the possibility is there. The same holds in the case of scarlet fever. This is a disease in which the whole skin is acutely affected; the subsidence of the cutaneous inflammation is likely to be associated with a vasomotor disturbance of internal parts, a pathological process being precipitated by slight causes. That affections of the skin are related with such changes is shown by the occurrence of duodenal ulcers with burns. These are no more due to the action of bacteria or their toxins than are the ordinary gastric or peptic ulcers which appear.

Whilst there is much need for an investigation of the reflex vasomotor changes which occur, it may be stated that the evidence indicates that in the development of nephrosis the play of bacteria or of their toxins or of other toxins is certainly not the sole, and most probably not even an important agent.

I am, Sir, yours faithfully,

Rugby, Jan. 31st, 1931. R. H. PARAMORE.

DISSEMINATED SCLEROSIS: EXPERIMENTAL VACCINE TREATMENT.

To the Editor of THE LANCET.

SIR,—For some time past, in conjunction with Miss K. Chevassut, I have been engaged in a research upon an experimental vaccine treatment of disseminated sclerosis. A preliminary communication on the subject was published in THE LANCET of March 15th, 1930.

[1] Paramore, R. H.: Eclampsia and Its Renal Lesion, Jour. Obstet. and Gyn., Brit. Emp., 1929, xxxvi., 341.

For her research work Miss Chevassut received a grant from the Medical Research Council.

Meanwhile, also under the auspices of the Medical Research Council, independent observations, biochemical and bacteriological, were carried out by Dr. E. A. Carmichael. His results, when submitted to the Council, differed in many material respects from those of Miss Chevassut. Accordingly the Medical Research Council advised Miss Chevassut to demonstrate certain of her observations in the laboratories at Queen-square under her own test conditions. I myself repeatedly urged her to do this.

For reasons of her own Miss Chevassut has refused to comply with my wishes and those of the Medical Research Council. I have therefore had no alternative but to dissociate myself from Miss Chevassut. The research at Westminster is being continued.

I am, Sir, yours faithfully,

J. PURVES-STEWART.

Buckingham-street, Victoria, S.W.. Feb. 10th, 1931.

*** We have received the following communication from the Halley Stewart Trust Office :—"The Halley Stewart Trust has generously provided spacious freehold premises at Hampstead for an independent Institute, the equipment of which will be shortly completed, where Miss Chevassut's research and the clinical work in disseminated sclerosis, and kindred ailments, will be continued in conjunction with a consulting physician, and with all the desired conditions at command which experience has proved to be essential to secure the most favourable results. The resources of the new Research Institute will be open to all members of the medical profession and to all hospitals. Any communications should be addressed to the secretary, the Halley Stewart Trust, 30, Chesterford-gardens, London, N.W.3."—ED. L.

A CASE OF ALEUKÆMIC LEUKÆMIA.

To the Editor of THE LANCET.

SIR,—Surely the remarkable case described under the above heading by Drs. A. W. Brodribb and P. Lazarus-Barlow on p. 347 of your last issue was one of "agranulocytosis" connected with an acute infection, in which the *noxa* acted much more on the leucoblastic than on the erythroblastic elements of the bone-marrow? Owing to an infection a case of lymphatic leukæmia (whether it be a case of leukæmic or hypoleukæmic or so-called "aleukæmic" lymphadenosis) may terminate with "agranulocytosis." The condition was allied to a terminal aplastic anæmia or to the class of "aleukia" (compare S. C. Dyke, THE LANCET, 1924, i., 1048) of Frank. That may explain what happened in the case in question, and, if so, the case was in a sense a case of aleukæmic leukæmia. It would have been interesting to know the thrombocyte count.

I am, Sir, yours faithfully,

London, W., Feb. 15th, 1931. F. PARKES WEBER.

GASTRIC SYPHILIS.

To the Editor of THE LANCET.

SIR,—With reference to the annotation on Gastric Syphilis in your last issue, it is of interest to note that bismuth, so successfully used for many years in the treatment of gastric ulcer, is to-day replacing mercury in the treatment of all stages of syphilis. Is it justifiable to infer that a certain percentage of gastric ulcers is specific? The type of ulcer found in cases which are operated upon for perforation is often crateriform or "punched out," that is to say that it is analogous morphologically with the late specific cutaneous ulcer. Further investigation would appear to be worth while.

I am, Sir, yours faithfully,

RODERICK J. G. PARNELL,

Feb. 16th, 1931. Surgeon-Commander, Royal Navy.

EARLY REFORMERS OF ASYLUMS.

To the Editor of THE LANCET.

SIR,—I am afraid that one or two errors have inadvertently crept into the report of what I said at the Royal Society of Medicine on this subject. It is true that William Tuke propounded his scheme for the foundation of The Retreat at York in 1792, but it was not until 1796 that it was actually opened for the reception of patients. Again, it is mentioned in the report that it was "not until the Lunacy Commission was established in 1845 that gross abuses were swept away," but my reference was to the report on madhouses published in 1815. There were Commissioners before 1845, but it was in that year that the permanent Board of Commissioners in Lunacy was established by Act of Parliament. Gardiner Hill, Conolly, and Charlesworth had carried out their reforms before the latter date.

I would also point out two misspellings in the names in the report; Conthon should be Couthon, while Daquin spelt his name thus.

I am, Sir, yours faithfully,

HUBERT J. NORMAN.

Camberwell House, Peckham-road, S.E., Feb. 17th, 1931.

THE LATE MR. A. E. G. TURNER.

To the Editor of THE LANCET.

SIR,—May I through your columns tender thanks for very many letters received from clients and friends in the medical profession sympathising in my loss of a son who was a valued companion in my business.

I should also like to thank you and your staff for very kind expressions of sympathy.

I am, Sir, yours faithfully,

PERCIVAL TURNER.

4 and 5, Adam-street, Strand, W.C., Feb. 17th, 1931.

BRITISH MEDICAL ASSOCIATION.—*Scholarships and Grants in Aid of Scientific Research*:—Scholarships: The Council of the British Medical Association is prepared to receive application for Research Scholarships as follows: an Ernest Hart Memorial Scholarship, of the value of £200 per annum, and three Research Scholarships each of the value of £150 per annum. These Scholarships are given to candidates whom the Science Committee of the Association recommends as qualified to undertake research in any subject (including State Medicine) relating to the causation, prevention, or treatment of disease. Each Scholarship is tenable for one year, commencing on Oct. 1st, 1931. A scholar may be reappointed for not more than two additional terms. A scholar is not necessarily required to devote the whole of his or her time to the work of research, but may hold a junior appointment at a University, medical school, or hospital, provided the duties of such appointment do not interfere with work as a scholar.

Grants: Grants for the assistance of research into the causation, treatment, or prevention of disease are also given by the Council, when preference will be given, other things being equal, to members of the medical profession and to applicants who propose as subjects of investigation problems directly related to practical medicine.

Conditions of Award: Applications: Applications for Scholarships and Grants must be made not later than Saturday, May 23rd, 1931, on the prescribed form, a copy of which will be supplied on application to the Medical Secretary of the Association, B.M.A. House, Tavistock-square, London, W.C.1. Applicants are required to furnish the names of three referees who are competent to speak as to their capacity for the research contemplated.

PANEL AND CONTRACT PRACTICE

A Modern Jeremiad.

A GENERAL practitioner, writing in the *Medical Press* of Feb. 4th, who does not disclose his identity, remarks that the panel system has for the most part ruined the feeling between patient and doctor. That is, he says, an outstanding fact. A very large proportion of patients hate the panel and everything to do with it, while many feel it to be definitely degrading; any extension of the system would do still further harm to the medical profession. It is a system that breeds annoyance such as unnecessary night calls, for it makes no difference to the patient whether he sends for the doctor at 9 a.m. or 11 p.m.; a private patient who pays one and a half to twice the normal fee knows better than to do it without reason. The panel surgery is packed with patients suffering from trivial ailments such as colds and gnat bites, none of which the sufferer would regard as worth a fee of 5s. The system allows of the employment of assistants whereby a patient is forced to put up with treatment by a medical man not of his own choice. The panel doctor is called upon to issue and sign without fee large numbers of forms, certificates and chits, while the panel is used by many as a rest cure and as a change from work.

Whatever justice there may be in this comprehensive complaint, it has at all events been set out before with equal pungency. Some of the items do not deal with things as they are. It is not unusual for a busy practitioner with a big list of insured patients to remark on the fewness of his night calls; if he has given up midwifery he may get none at all. The assistant only comes on the scene if the practitioner's list exceeds 2500, and then only with the sanction of the insurance committee. But the novelty is the suggestion for the avoidance of these drawbacks in the future. The writer believes that, were panel work to be paid in the same way as the National Deposit Friendly Society pays for its members, the great bulk of the ill-feeling to the present system would disappear. The doctor would then be paid for work actually done. There would be absolute freedom of choice of doctor and patient; the service might then become a complete one, including anæsthetics, X rays, massage, dental, and ophthalmic treatment. At the same time he would restrict medical officers of health and school medical officers to their proper sphere of inspection and reference. He would arrange with some local authority to save the practitioner a large part of his clerical work, and as for old-age pension papers, where his signature is essential the doctor would be paid a fee for each signature. To avoid over-pressure of work he would create a category of chronic patients who could be deflected down some other channel, either to a deputy regional medical officer or to the out-patient department of the local hospital. Finally he would remodel the national health insurance scheme to become of a contributory and genuinely insurance nature and entirely self-supporting. If no retaining fee were introduced into the revised panel system the line of cleavage between insurance and non-insurance practitioners would disappear and their relations would, he thinks, return to those which existed so happily before 1909.

But, as the chairman of the Coventry Insurance Committee remarked the other day, the existing health insurance scheme is actuarially sound, in happy contrast with certain other insurance schemes; and this in spite of the withdrawal of the exchequer grant. If contributions became voluntary what would be the income of the approved societies and, incidentally, how many practitioners in industrial areas would escape bankruptcy? Professional incomes, instead of growing with the diminution of sickness and the improvement in the general health of the community, would be entirely dependent on the volume of sickness, on epidemics and similar catastrophes. There may be defaulters in panel practice; no scheme, however Utopian, will entirely exclude commercialism. But is not the anonymous practitioner trying to put back the clock?

Cost of Drugs.

At a recent quarterly meeting of an insurance committee the chairman gave some figures intended to illustrate the fact that there is no limitation on the supply of drugs and appliances to insured persons as far as these are required for efficient treatment. In three recent cases oxygen was, he said, supplied for treatment on the following basis: (1) 24 prescriptions in 26 consecutive days, covering a total quantity of 940 cubic feet of oxygen at a cost of £11 17*s*. 3*d*.; (2) 22 prescriptions of oxygen in 28 days at a cost of £32 5*s*. 4*d*.; (3) 12 prescriptions of oxygen in 20 days at a cost of £3 6*s*. 4*d*.

NATIONAL COUNCIL FOR MENTAL HYGIENE.—A meeting of this Society was held at the rooms of the Medical Society of London on Thursday, Feb. 12th, Sir Squire Sprigge in the chair, when Mrs. Neville-Rolfe, secretary-general of the British Social Hygiene Council, delivered a thoughtful address on modern marriage and its problems. Regarding these problems, as they affected the race, social order, and the individual, she analysed the reasons for many of the prevalent problems and anomalies associated with marriage to-day among civilised peoples, and found that their solution or removal would follow a wider acceptance of biological tenets. This view she reconciled with the advocacy of monogamy as the basis of that family life, on which progressive society should rely.

At the conclusion of the address Dr. Doris Odlum, hon. secretary for propaganda, brought the work and the needs of the National Council for Mental Hygiene to the attention of a crowded room. She said that the Council acted as a liaison body between the general public and the medical profession and provided a common meeting ground for those interested in the questions of mental hygiene, especially in its sociological aspects. The human factor was coming more and more to be appreciated as the essential determinant of conditions in education, industry, politics, and above all in marriage and the home. Propaganda was, however, still greatly needed. This was carried out by means of lectures and public meetings; by conferences such as that held most successfully in November, 1929, which was to be followed up by another conference from May 27th to 29th this year; and by the work of expert sub-committees. One of the directions in which there was an urgent need for public education was that of the extension of facilities for preventive and early treatment of nervous breakdown and allied emotional and minor mental disorders. The annual economic loss caused by illness of this nature, to say nothing of the human suffering involved, made this problem one that urgently needed constructive measures. She therefore urged all those present to take their share in promoting activities of such vital importance both to the individual and to the nation, by joining the National Council for Mental Hygiene.

NURSES AT ST. BARTHOLOMEW'S HOSPITAL.—The League of St. Bartholomew's Hospital Nurses has raised over £1000 to name and endow a bed in the new surgical block of the hospital.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS.

DANGERS OF IMPURE MILK.

In the House of Lords on Feb. 10th, as already briefly reported, Viscount ASTOR stressed the need for developing the demand for the supply of British milk, but there must be a guarantee that the milk offered to the public was reasonably safe and clean. Clean methods of milking and handling, he said, would not cost much.

Lord Moynihan on Pasteurisation.

Lord MOYNIHAN said he would like to offer all the support he could to the plea of Viscount Astor for an increase of the supply of milk to this country; but he offered that support with certain qualifications. If he might assume for a moment a representative capacity he would say that the whole medical profession of this country would support the noble Viscount's plea. They had all lived for a considerable period of their lives on nothing but milk which was almost essential for the growing youth of the nation. Statistics might be said to prove anything, even the truth, and the truth was that milk was an essential ingredient in the food of young, growing children. It was also a most necessary aid to people in advanced years of life and especially in times of sickness. It was therefore almost a commonplace to say that every effort should be used to secure to the people at all times a supply of milk commensurate with their needs, a supply that should be cheap and of good quality, free from those frequent contaminations that made milk so dangerous an article of diet in a large proportion of cases. They were all interested a few years ago by the question, what is whisky? He would venture to ask, what is milk? The correct answer, of course, should be that milk was the pure produce of the mammary glands of the cow, but it was rarely that. Milk in many instances was contaminated by secretions of the udder and discharges from tuberculosis. It was contaminated almost intolerably with dung, with the hair of the cow, with the dirt and sweat from the man or woman who milked the cow, from the dust of the streets and from the utensils in which milk was stored and carried about the country. The inevitable result was that milk might be, and very frequently was, capable of causing a number of diseases which the medical profession was called upon to treat. The more serious of those diseases was, of course, surgical tuberculosis. The others were typhoid fever, paratyphoid fever, diphtheria, scarlet fever—almost all infections from infected milk. This was a condition that had been going on from the very birth of human history, for one of the oldest specimens available from the Neanderthal man showed his vertebræ were affected by surgical tuberculosis, due, he had no doubt, to the drinking of contaminated milk from the animals at his disposal. The many specimens taken from the mummies of ancient Egypt showed that cows in ancient Egypt had tubercle and were capable of giving the disease to man.

A HUMAN PROBLEM.

The problem, therefore, of an increased supply of milk was not the only problem. As one walked about the streets, not so much in London as in provincial towns, one saw a large number of hunchbacks, people with warped joints, people with necks full of glands, scars on the neck from abscesses, and a large number of these people suffered from their diseases because of the drinking of contaminated milk. He thought that the minds of men were much more disturbed by acute events than they were by the chronic diseases to which they had long become accustomed. One heard with anguish of the loss of 1,000,000 men in the late war, and yet the public seemed almost indifferent to the fact that 50,000 people died every year in this country from cancer, that 100 people died every day from tuberculosis, and that no less a sum than £250,000 a day was spent on the treatment in this country alone of tuberculosis, a large proportion of which was preventable. When acute outbreaks occurred the minds and hearts of men were stirred. He had made a note of a few of the occasions on which there had been acute outbreaks from the drinking of contaminated milk in this country in the last few years. In Brighton and Hove in the last three months of 1929 there were 1000 cases of infection, with 65 deaths. In London, 90 per cent. of the milk of which was pasteurised, there were 400 cases in 1928; in Northampton in 1926 there were 95 cases of scarlet fever traced to contaminated milk; in Bedford in the same year there were 72 cases of scarlet fever also traced to contaminated milk. But in hearing of these diseases caused by milk it was not realised that the morbidity and the mortality which resulted from the drinking of impure milk not only affected people in the way he had described, but opened the door to a multitude of other illnesses which themselves proved fatal. A little time ago he amputated the thigh of a man, aged 71, who had suffered since the age of 8 when he was operated upon by Sir William Lawrence for tuberculous disease of the bones of the leg. He had had 18 operations in the intervening period, and at the age of 71 he (Lord Moynihan) removed his thigh. There would be no mention in the man's eventual death certificate of the fact that he had ever suffered from tubercle. So when they read mortality lists of patients the cases of surgical tuberculosis were quite frequently not included.

EXTENT OF BOVINE TUBERCLE.

The question of the milk-supply was concerned therefore not only with obtaining the milk required for the people of this country but with its purity. It was not only an agricultural problem; it was a human problem. In this country at the present moment there were roughly about 3,000,000 cows giving milk, and of those cows over 1,000,000 were suffering from tuberculosis. The *Veterinary Record* of May last year stated that 40 per cent. of the cows of our dairy herds producing milk for human consumpton were suffering from tuberculosis; that in England 31·5 per cent. of tuberculosis in children up to the age of 15 was of bovine origin; that in England 57 per cent. of enlarged tuberculous glands in the neck and 33 per cent. of bone and joint tuberculosis in children, and in Scotland 90·3 per cent. of glandular enlargements of the neck and 61·2 per cent. of bone and joint tuberculosis, owned their origin to the drinking of contaminated milk. There was in this country at the present moment the greatest orthopædic surgeon the world had ever known, and he estimated the incidence of tuberculous disease of bones and joints from contaminated milk to be 70 per cent. The slaughter of animals showed the same result. In London 33 per cent. of animals slaughtered showed evidence of tubercle, whereas in Dublin only 23 per cent. of the animals killed were tuberculous. If one put a statement of this kind into the language of the laboratory, and if one regarded the problem from that point of view, one would see that first of all the tubercle bacillus was produced; then it was innoculated into a culture medium of the most satisfactory kind, the best medium being the young, active, succulent tissues of a young child; then the culture medium itself was put into an incubator so that it might have every possible facility and all the necessary food for growth. The municipal term for an incubator was a slum. The result was so costly that the nation lost 100 people every day of the year, and spent, as he had said, £250,000 a day in the treatment of tuberculosis. He repeated that the problem was a human problem with which he had had to deal all his life. But it was also in a large measure a financial problem of the first order.

SLAUGHTER OF COWS NO REMEDY.

What was to be done? A milk-supply was very necessary. Were they to slaughter all the cows infected with tubercle? If that were done he thought it would be quite ineffective except so far as the immediate present was concerned, for tuberculosis gave rise to very few signs in some cases in the cow. There were cases where animals have been slaughtered that were supposed to be without blot, and in two cases within his own knowledge, 44 per cent. in one case and 47 in the other were found to be tuberculous. Moreover, the byres and other places where the cows were kept were very often saturated with tubercle. Therefore after slaughtering the animals there would have to be drastic destruction of the infected byres. The cost would be prohibitive. There would be animals overlooked who would soon contaminate their mistals, and before long the disease would be as widespread as before. To immunise the animals would be a matter of great difficulty and great uncertainty. The problem which needed to be considered was first as to whether they could improve the present conditions of milk-supply in this country. He would pay a tribute to the work which was being done at Reading and to the work done by the Earl of Iveagh in connexion with the production of pure milk for human consumption, and at a cost very little above that of ordinary milk sold in the streets of the larger towns and cities. But if it was almost impossible in the present circumstances to produce throughout the country guaranteed tubercle-free milk, what was to be done if milk was still desirable for human consumption? In the first place there was a method of destroying all organisms in milk, a method easily available in any household—namely, to boil the milk. It was a method which cost virtually nothing. Every drop of milk taken into his own house was boiled immediately it was delivered. It was true that certain disadvantages attached to the method of boiling, but the nutritive value of milk, contrary to general opinion, was not in the least diminished by boiling. Dr. Janet Lane-Clayton conducted an inquiry for the Ministry of Health, and came to the conclusion that if there was any alteration in the nutritive value it was in favour of boiling as compared with raw milk. It was true that boiling destroyed the vitamins and reduced the calcium and phosphorous contents, but from the point of view of consumption there was no doubt whatever that while boiling milk reduced its value, at the same time there was an easy method of compensating for the loss of these essential qualities.

PASTEURISATION.

The second method that could be adopted to make ordinary milk fit for human consumption was pasteurisation. In London and Manchester 90 per cent. of the milk was pasteurised. That was why he found indifference among people who lived in London to the severity of the threat of the milk problem. Pasteurisation meant keeping milk roughly at a temperature of 145° F. for 30 minutes. There was no homogenisation or breaking up of the cream, and the milk flavour, in his judgment at any rate, was improved. There was no difficulty in pasteurisation except that it had to be carried out in part by human machinery, and here, as elsewhere, human machinery sometimes broke down. He had figures from Montreal which showed that although the milk was pasteurised, in 1927 there was an outbreak of enteric fever which affected 1755 patients, and there were 453 deaths, whereas in Toronto where 99 per cent. of the milk was pasteurised, and where there was supervision of the men undertaking the work, surgical tuberculosis was no longer a problem. A great deal therefore depended upon the human skill used in the process of pasteurisation. An article appeared in the *Times* about a year ago asserting on very competent authority that pasteurisation had failed in the experience of medical men in London. Pasteurisation was perfectly satisfactory. It destroyed tubercle and any other harmful bacilli; but it was essential that the machinery for carrying it out should be constantly supervised, and that as far as possible bacteriological control should be exercised at every stage of the procedure. It was most desirable that milk should be produced under conditions which made it as pure as possible. If that was done he (Lord Moynihan) would support Lord Astor's plea for a very largely increased supply of milk in this country. There was another process known as sterilisation which consisted in keeping milk at a temperature of about 100° C. for about 25 minutes. That was an immense advantage so far as the use of milk in warmer climates than our own was concerned, but for us pasteurisation was certainly adequate. Sometime ago a very authoritative letter appeared in THE LANCET signed by Lord Dawson, Sir Thomas Horder, and others, advocating that the whole milk-supply of large towns should undergo pasteurisation, at least before being supplied for human consumption. He thought some further inquiry than had yet been made should be directed to the milk-supply of this country. The time had come for a Royal Commission, not for the purpose of postponing the question but of bringing to the front all the knowledge so far obtained about the milk problem, and to let the public know that milk for human consumption should be produced under conditions which made it possible for people to drink it without the grave risks to health which had been so prominent in his speech. That might be an ideal—and ideals were not so much for capture as pursuit—but in his judgment it was an ideal which this nation should steadily pursue.

REGISTRATION OF OSTEOPATHS.

On Wednesday, Feb. 11th, Mr. W. M. ADAMSON asked for leave to bring in a Bill to regulate the practice of osteopathy and to prescribe the qualifications of osteopathic practitioners. He said that the objects of the measure were first—to establish a board or council with the necessary authority to regulate the practice of osteopathy in this country and second to compile a register of practitioners of a prescribed standard according to qualifications. The proposed board was of a representative character, dealing with all the representative bodies interested. It was proposed that the Board should have the right, which had been given to other bodies of the kind, to determine what were to be the qualifications entitling a practitioner to be placed on the register and also that it should have some practical control over the examinations in connexion with those qualifications. He knew that there was doubt in certain quarters as to whether the practitioners in the osteopathic profession to-day were entitled to these privileges, and they were frequently reminded that they were charlatans and quacks who were trespassing on the privileges of another profession, but it was not merely of one profession that that could be said to-day, or at any time in our history, and the probability was that in the building up of the traditions of any profession there had always been those who had been termed interlopers. The privileges that he was asking for professional skilled osteopaths had already been established in 47 of the United States of America, and in law they were entitled to the same privileges as other professions that might be in competition with them. Osteopathy was a system of health and healing founded on the fact that the body itself could provide the necessary qualities for health and healing provided it was kept in that mechanical adjustment that was essential for hygiene and other necessary conditions. That theory was at times contested, and it was said that it could not be put into practice. If a theory was not established, at least they could keep an open mind and allow the operation of a new health-giving service in this country. In conclusion, he asked the House to grant this privilege to osteopaths because the claims of the medical profession were sometimes in conflict with the newer health giving services.

Dr. FORGAN said that it would not surprise certain members of the House that a member of the medical

profession should ask the House not to allow this Bill to be introduced. It might be said that in the past the medical profession had laid itself open to the accusation that they had sought to make themselves a very close corporation, but on calm reflection most people would agree that the conservative attitude—using that word "conservative" in its best sense—of the medical profession towards new methods of treatment had probably been beneficial to the mass of the community. He would be a rash man to-day who said that every registered medical practitioner had at his command the skill and the knowledge that some skilled osteopaths had, and it was unfortunate that some men with a natural bent—for example a wonderful pair of hands—should be prohibited from exercising that power of health which they might do if they were recognised and their practice regularised. He was opposing the introduction of this Bill, not because there was nothing good in osteopathy, but because Mr. Adamson was speaking not on behalf of all osteopaths but on behalf of a section who were content with a standard of education and training which in the opinion of many was not a sufficient guarantee that if this recognition was given serious mistakes might not occur The Bill did not seek to lay down a sufficiently high standard for those who were to be recognised under it. There were in this country to-day, osteopaths who have had four, five, and six years' training in their subject There were in almost every village in the country bone-setters who did some good, and who often did a great deal of harm, and he did not want men who had real skill and training classified in the same category as their less fortunate brethren.

Leave was given to introduce the Bill without a division, and the Bill was brought in and read a first time.

A PROHIBITION BILL REJECTED.

In the House of Commons on Feb. 13th, Mr. SCRYMGEOUR moved the second reading of the Liquor Traffic Prohibition Bill, which he said proposed to prohibit the manufacture, importation, and sale of alcoholic liquors for beverage purposes. Clause 3 of the Bill provided for the supply of alcoholic liquors for scientific or industrial purposes, and laid it down that alcohol required for medicinal purposes should be supplied only in bottles labelled "poison" by properly qualified medical practitioners or by registered chemists. In seconding the motion for its rejection, Lieut.-Colonel FREMANTLE said that the proposals were not only impracticable, but would put a brake on those useful, successful, and efficient measures which were slowly bringing alcoholic excess to an end. Dr. HASTINGS said there could be no doubt that this country would be happier, healthier, and wealthier if this Bill was carried out, but he was afraid that what had happened in America would be repeated here. The Bill was rejected by 137 votes to 18—majority against, 119.

HOUSE OF COMMONS.

WEDNESDAY, FEB. 11TH.

Maternal Mortality in Ceylon.

Major GRAHAM POLE asked the Under-Secretary for the Colonies whether he could give information in regard to the rate of maternal mortality among the Indian plantation labourers in Ceylon.—Dr. SHIELS replied: The rate of maternal mortality among the wives of Indian plantation labourers on scheduled estates in Ceylon during the year 1929 was 20·6 per 1000 births. The corresponding figures in this respect for 1930 have not yet been received.

THURSDAY, FEB. 12TH.

Health and Nutrition Advisory Committee.

Mr. FREEMAN asked the Minister of Health whether, in view of their practical experience of matters of health in relation to diet, he would consider the appointment on the health and nutrition advisory committee a nominee of the national vegetarian societies or be prepared to consider evidence submitted by that body.—Mr. GREENWOOD replied: This committee is appointed to advise me on the practical application of modern advances in the knowledge of nutrition, and I cannot entertain the question of adding to it a nominee of any particular societies. I will, however, pass on to the committee my hon. friend's suggestion that they should consider evidence from the societies mentioned.

Lancashire Hospital and National Insurance.

Mr. FREEMAN asked the Minister of Health whether the application of the Eccles and Patricroft (Lancashire) Hospital, to be registered under the National Health Insurance Act for the supply of drugs, medicines, and appliances, had been granted.—Mr. GREENWOOD replied: These applications are addressed not to me but to insurance committees. I understand that the Lancashire Insurance Committee have felt unable to entertain an application from this hospital on the ground that it does not comply with the statutory conditions governing admission to any list of insurance chemists.

Health Insurance Contributions and Benefits.

Mr. GORDON MACDONALD asked the Minister of Health the total contributions of the workers to health insurance, and the total health insurance benefits paid, during each of the last three years.—Mr. GREENWOOD replied: The amount of the employees' portion of the health insurance contributions and the total amount of health insurance benefits expenditure in Great Britain for each of the last three years are approximately as follows:—

	Employees contributions.	Benefits expenditure.
1928	12,600,000	32,300,000
1929	12,700,000	34,500,000
1930	12,800,000	32,550,000

Sale of Tuberculous Milk.

Mr. LAMBERT asked the Minister of Health whether, as under the Milk and Dairies Order, 1926, the sale of milk from tuberculous cows for human consumption was forbidden, he would introduce legislation securing similar precautions with regard to imported milk products.—Mr. GREENWOOD replied: Under the Imported Milk Regulations, 1926, imported milk must be free from tubercle bacilli. As regards milk products, I am advised that there is not the same risk from the presence of tubercle bacilli as in the case of milk, and that imported products are in fact no more likely to be infected than milk products of home manufacture. I will, however, consider whether any further measures should be taken to safeguard the public against the risk of tuberculosis from the consumption of milk products.

Royal Veterinary College.

Mr. ORMSBY-GORE asked the Minister of Agriculture whether the Government's conditional offer of £150,000 to the Royal Veterinary College was confined to rebuilding on the present Camden Hill site, or would be equally available for acquiring a country site with a farm attached where training and research could be carried on in an environment more suitable than the present site in London.—Dr. ADDISON replied: The committee appointed by Mr. Guinness, when Minister of Agriculture, recommended unanimously that the College should be rebuilt on the present site, and that recommendation, of which the grounds are stated in the committee's report, was accepted both by the Government and by the Governors of the College. The Government contribution of £150,000 was therefore offered with a view to reconstruction on the present site.

Mr. ORMSBY-GORE: Does the right hon. gentleman regard himself as absolutely bound by the recommendations of this committee if a much cheaper site were available in the country which would be more suitable for the College?

Dr. ADDISON: I do not wish to say that I am absolutely bound, but I understand that this report, after very serious inquiry, was quite unanimous on the point.

Lieut.-Colonel FREMANTLE: Is it not the case that since that report arterial roads and tube extensions have been made which involve a new consideration in connexion with this proposal?

Dr. ADDISON: I do not think that the report was based on the question of transport. Other matters led to these recommendations.

Mr. PRICE: Will the right hon. gentleman bear in mind that veterinary research conducted in the middle of London is not exactly calculated to achieve its end?

Dr. ADDISON: Of course, veterinary research is being carried on in a very large number of places, many of them outside London.

International Night Work Convention.

Mr. FREEMAN asked the Minister of Labour whether her attention had been called to a recent decision of the governing

body of the International Labour Office to revise the convention on night work and to permit women to be so engaged; and whether the British official delegate supported the resolution.—Miss BONDFIELD replied: The governing body decided that the International Labour Conference should consider the desirability of introducing two modifications into this convention, first by inserting an exception for supervisory workers, and secondly by allowing Governments to fix the prohibited period either between 10 P.M. and 5 A.M. or between 11 P.M. and 6 A.M. The first of these proposals originated with His Majesty's Government, and their representative on the governing body supported it, but he voted against the consideration of the second proposal by the conference.

MONDAY, FEB. 16TH.

Indian Medical Department Reserve.

Major GRAHAM POLE asked the Secretary of State for India what was the contemplated establishment of the Indian medical department reserve of sub-assistant surgeons, the formation of which had been sanctioned by the Government of India.—Mr. WEDGWOOD BENN replied: 150 in the first instance.

All-India Medical Council.

Major GRAHAM POLE asked the Secretary of State for India what was the present position in regard to the proposal to establish an all-India medical council.—Mr. WEDGWOOD BENN replied: The Government of India reported on Jan. 27th that the draft of a new Bill for the establishment of an all-India Medical Council was nearly completed.

Mental Department at Liverpool.

Mr. KINLEY asked the Minister of Health how many patients had been transferred from the Mill-road mental department (Liverpool) to other mental hospitals; and whether the transfer had caused overcrowding at the new mental hospital.—Miss SUSAN LAWRENCE replied: My right hon. friend is informed by the Liverpool City Council that, during 1930, 583 patients were transferred from the Mill-road Infirmary to the Lancashire County Mental Hospitals. As regards the second part of the question, my right hon. friend is informed that patients are transferred from the Mill-road Infirmary to any of the county mental hospitals in which there are vacancies. He has no information of any overcrowding in any of the county mental hospitals.

TUESDAY, FEB. 17TH.

Shortage of Service Medical Officers.

Major GLYN asked the Secretary for War whether, as it was necessary to employ 57 temporary and retired officers of the Royal Army Medical Corps and there was a deficiency of 124 of the authorised establishment, he would consult with the Board of Admiralty and the Air Ministry in order to endeavour to discover the cause of this shortage of medical officers under the present regulations.—Mr. T. SHAW replied: I have this matter under my personal consideration, and am in close touch with my colleagues in regard to it.

Major GLYN: Is the right hon. gentleman satisfied that the conditions are satisfactory as regards medical officers?

Mr. SHAW: No, I am not satisfied that the conditions are satisfactory, but unfortunately the difficulties in the way are not easy to surmount.

Lieut.-Colonel FREMANTLE asked whether this question had not been on the *lapis* for 12 years, and was it not necessary now to take urgent action to deal with it?

Mr. SHAW: There is one word that would solve the whole matter, and that is money, but unfortunately by the provision of money one might do more harm than good in respect to other officers in the forces who are not medical officers.

The Calmette Treatment.

Mr. FREEMAN asked the Minister of Health whether the investigations into the cause of the deaths of 67 children at Lübeck early in 1930 following the Calmette treatment of the Pasteur Institute were yet completed: and if he could obtain a report on the matter.—Miss LAWRENCE replied: My right hon. friend understands that an official report has been made to the German Imperial Health Council concerning these deaths. The council concluded that t' de ths were not traceable to the original B C G cultures, out were probably due to some unexplained admixture with virulent tubercle bacilli. The Imperial Council have also confirmed their decision of 1927 that the use of living bacilli, even in an attenuated form, for human prophylaxis is undesirable in the present state of knowledge.

MEDICAL NEWS

University of Oxford.

On Feb. 14th the following degrees were conferred:—

D.M.—C. P. Blacker.
B.M.—J. H. Chitty, W. E. S. Merrett, and F. Bell.

University of Cambridge.

Dr. A. A. Miles and Dr. E. T. C. Spooner have been appointed university demonstrators in pathology for three years.

University of Manchester.

Dr. W. W. Kay has been appointed assistant lecturer in chemical pathology.

University of Glasgow.

Prof. Andrew Hunter has been elected dean of the faculty of medicine for 1931. Bellahouston gold medals have been conferred on Prof. D. F. Cappell and Dr. E. M. Dunlop, and the Macewen medal in surgery on Dr. W. S. Mack.

Royal College of Surgeons of England.

A meeting of the Council was held on Feb. 12th with Lord Moynihan, the President, in the chair. Mr. Victor Bonney was re-elected the representative of the College on the Central Midwives' Board for the ensuing year.

The Fellowship of the College was conferred on Mr. R. W. Reid, of St. Thomas's Hospital, and the membership on 149 candidates, whose names were given in our issues of Feb. 7th and 14th as recipients of the L.R.C.P. (with the exception of S. S. Ahluwalia, W. N. Chalmers, Marjorie Low, M. N. Lunn, E. M. Newham, David Ockham, and E. M. Sharples).

Diplomas in public health were granted jointly with the Royal College of Physicians to 19 candidates, whose names appeared in our issue of Feb. 7th.

The President reported that an election of three Fellows into the Council would take place on Thursday, July 2nd, at 11 A.M., in the vacancies occasioned by the retirement in rotation of Mr. J. Herbert Fisher, Mr. G. E. Gask, and Mr. Graham Simpson; that notice of the election would be given to the Fellows by advertisement and circular on March 6th; that March 16th would be the last day for the nomination of candidates; and that a voting-paper would be sent on March 31st to every Fellow whose address is registered at the College.

History of Science and Technology.

Dr. Charles Singer will preside over the second international congress of the history of science and technology which will take place in London from June 29th to July 3rd, with the Science Museum as its headquarters. Further particulars can be had from the hon. secretary, Mr. H. W. Dickinson, the Science Museum, South Kensington, S.W.7.

Neurology and Psychiatry in Vienna.

A fifth intensive post-graduate course in neurology and psychiatry will be held in Vienna from June 30th to July 31st. It will consist of systematic classes in English at Prof. Wagner-Jauregg's neuropsychiatric clinic (now directed by Prof. Pötzl) and at Prof. Marburg's neurological institute. Further particulars may be had from the American Medical Association of Vienna, at Alserstrasse, 9, Wien, VIII.

British Institute of Philosophical Studies.

At a meeting to be held at the Royal Society of Arts, 18, John-street, Adelphi, London, W.C., on Feb. 24th, at 8.15 P.M., Prof. John Macmurray will lecture on Modern Civilisation and the Moral Ideal. Three lectures on Biology and Social Life will be given by Prof. Julian Huxley at University Hall, 14, Gordon-square, W.C., at 5.54 P.M. on Tuesdays from March 3rd.

London Hospital Medical College.

The Liddle triennial prize for 1929–30, offered for public competition, has been awarded to Dr. William Evans. The prize is awarded for an essay, and the subject set was the Cause and Incidence of Duodenal Ulcer.

Royal Medical Benevolent Fund Guild.

The women's branch of the Royal Medical Benevolent Fund, commonly known as the Royal Medical Benevolent Fund Guild, has opened 37 new branches within the last two years. There are still, however, many important towns without branches, and Mrs. Keppel Barrett (102, Church-street, Kensington, London, W.8) informs us that she will be grateful for introductions to doctors' wives in provincial centres. Further information about the Guild and its work may be had from the secretary at Tavistock House, Tavistock-square, W.C.1.

University of London.

At a meeting of the Court on Feb. 11th a letter was read from the London County Council saying that the council's block maintenance grant to the University in each of the four academic years, 1931–32 to 1934–35, would be £125,000. This figure represents an increase of £20,000 on the council's grants for the current year, and of £44,000 on the grant to the university and its colleges in 1929–30.

St. John's Hospital for Diseases of the Skin.

We are asked to state that the out-patient department of this hospital (49, Leicester-square, London, W.C.2) is open daily at 1.30 P.M. and 5.30 P.M. (Saturdays 1.30 P.M. only). Inconvenience is sometimes caused by practitioners advising their patients to attend at the hospital in the morning.

New Woolwich Health Centre.

After cutting the first sod of a new housing estate of 275 acres at Eltham on Feb. 14th, Mr. Greenwood, Minister of Health, opened the new municipal health centre on an adjoining estate. This is a simple one-storey building, surrounding a quadrangle, which will serve the needs of school medicine as well as of the pre-school group. It includes a hall for lectures and demonstrations, and has cost £5500.

Fife County Asylum.

Mr. Adamson, the Secretary of State for Scotland, has opened a new home for the female nurses at the Fife County Asylum at Springfield. It provides accommodation for a staff of 81, and was erected at a cost of £26,000.

Glasgow Royal Infirmary.

The subscribed income of the Glasgow Victoria Infirmary for the year 1930 was less by £19,109 than the maintenance costs, which it is stated now exceed £67,000 per annum. The average daily number of patients was 383, compared with 374 in 1929, and the cost per patient was £7 12*s.* 1*d.*, as against £6 5*s.* 7*d.* the previous year. A new X-ray plant has been presented and installed, and the Infirmary's supply of radium has been augmented during the past year by 100 mg. received on loan from the Radium Institute.

Royal London Ophthalmic Hospital.

The annual dinner of past and present students of Moorfields Hospital was held at the Langham Hotel on Feb. 12th. The chairman was Mr. A. H. H. Sinclair, of Edinburgh. The toast of the Hospital and Medical School was proposed by the chairman; Mr. Luling and Mr. Charles Goulden, the dean, replied. Other toasts were proposed by Mr. R. Affleck Greeves and Mr. R. Foster Moore, and the respondents were Dr. Watts Eden and Sir Harold Fawcus. The dean in presenting his report spoke of the improvements that were soon to be put in hand by the board of management. The out-patients' department would be much enlarged and improvements made, whereby the clinical teaching could be carried out more conveniently. The school accommodation would also be extended as well as the library and laboratories. The hospital itself had been enlarged during the past year, and there were now wards for private patients. The number of students during the year was 160, of whom 98 were new. At the examinations for the D.O.M.S. in February and July, 1930, of the 64 candidates for the complete certificate 38 passed, and of these 26 had pursued their studies at Moorfields.

During the past year Dr. W. Russell Brain has been elected assistant physician, Mr. G. H. Howells ear, nose, and throat surgeon, and Mr. John Winter dental surgeon. Prof. H. H. Woollard has been appointed lecturer in anatomy.

Eugenics Society.

The Galton anniversary dinner was held by the Eugenics Society on Monday last, Feb. 16th, at the Rembrandt Hotel, London, when Sir Arthur Thompson delivered the Galton Lecture. After an eloquent eulogy of Galton as the observer who placed the study of heredity on a scientific plane, the lecturer said that he would venture to criticise the great man in that he was a little too much absorbed by the problems of heredity, leaving aside those of environment. In a witty and closely reasoned discourse Sir Arthur went on to describe the manner in which insects, especially ants and bees, fishes, and various lowly animals react to the conditions in which they find themselves; but far from taking them as models of behaviour, there were, he said, in their conduct of life many things which constituted red flags of warning to human beings. Gross over-fertility, male parasitism, and labour out of all proportion to results were such flags, and their existence might form valuable admonition to man to-day. Dean Inge presided over a large company of members of the Society and guests, who recorded at the close a vote of thanks to the Galton lecturer, proposed by Sir Gowland Hopkins, P.R.S., and seconded by Admiral Sir Herbert Richmond.

Medical Diary

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
MONDAY, Feb. 23rd.—8 P.M., ODONTOLOGY. Paper: Mr. A. Hopewell Smith: Evidence Against the Theory of Metabolic Properties of Human Enamel. Casual Communication: Mr. A. Hopewell Smith: The Head of an Egyptian Mummy.
TUESDAY.—5 P.M., MEDICINE. Paper: Prof. I. Snapper (Amsterdam): The Practical Significance of the Protein-content of the Plasma.
THURSDAY.—8.30 P.M., UROLOGY. Paper: Dr. W. R. Reynell: Sexual Neurosis.
FRIDAY.—8 P.M., EPIDEMIOLOGY AND STATE MEDICINE. Paper: Dr. P. Manson-Bahr: The Epidemiology of Human Trypanosomiasis.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.
MONDAY, Feb. 23rd.—8.30 P.M., Mr. A. D. Wright: Treatment of Indolent Ulcers of the Leg. (Discussion.)
WEDNESDAY.—9 P.M., Dr. J. W. McNee: The Spleen (Second Lettsomian Lecture.)

MEDICO-LEGAL SOCIETY, 11, Chandos-street, Cavendish-square, W.
THURSDAY, Feb. 26th.—8.30 P.M., Mr. R. Churchill: The Forensic Examination of Firearms and Projectiles. To be followed by a discussion.

MEDICAL SOCIETY FOR THE STUDY OF VENEREAL DISEASES, 11, Chandos-street, Cavendish-square, W.
FRIDAY, Feb. 27th.—8.30 P.M., Mr. David Lees: Presidential Address. A Discussion will follow.

INTERNATIONAL SOCIETY FOR INDIVIDUAL PSYCHOLOGY, 55, Gower-street, W.C.
FRIDAY, Feb. 27th.—8.30 P.M., Dr. T. E. Lawson: Anxiety States.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Pall Mall East, S.W.
THURSDAY, Feb. 26th.—5 P.M., Surg.-Capt. S. F. Dudley, R.N.: Some Lessons of the Distribution of Infectious Disease in the Royal Navy. (First Milroy Lecture.)

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, Feb. 23rd to SATURDAY, Feb. 28th.—MEDICAL SOCIETY OF LONDON, 11 Chandos-street, Cavendish-square, W. Mon., 4 P.M., free lecture by Dr. C. Worster-Drought: The Differential Diagnosis of Organic Nervous Disease from Functional Nervous Disorders.—ROYAL WATERLOO HOSPITAL, Waterloo-road, S.E., Fri., Special Lecture on Special Measures after Abdominal Operations by Mr. Rodney Maingot at 4.30 P.M.—ROYAL CHEST HOSPITAL, City-road, E.C. Free demonstration by Dr. Saxby Willis on Thurs., 3 P.M.—QUEEN'S HOSPITAL FOR CHILDREN, Bethnal Green, E. Free demonstration of Orthopædic Cases in Wards and Out-patient department by Mr. Whitchurch Howell on Thurs. from 2 P.M. to 4 P.M.—HOSPITAL FOR TROPICAL DISEASES, Gordon-street, W.C. Special post-graduate course in Tropical Medicine. All day.—Further particulars from the Fellowship of Medicine.

ROYAL INSTITUTION, Albemarle-street, W.
THURSDAY, Feb. 26th.—5.15 P.M., J. B. S. Haldane: Respiration.

NATIONAL HOSPITAL, Queen-square, W.C.
MONDAY, Feb. 23rd.—12 noon, Dr. Greenfield: Acute Disseminated Encephalomyelitis. 2 P.M., Dr. Riddoch: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: Spinal Vascular Disease.
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Purdon Martin: Vascular Lesion of the Brain Stem.
WEDNESDAY.—2 P.M., Dr. Martin: Out-patient Clinic.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Walshe: Hemiplegia.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Collier: Neurosyphilis.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.
THURSDAY, Feb. 26th.—9 P.M., Mr. W. I. Doggett: Causes and Treatment of Earache.

UNIVERSITY COLLEGE MEDICAL SCHOOL, University-street, W.C.
TUESDAY, Feb. 24th.—5.15 P.M., Dr. Janet Vaughan: Pathology and Treatment of Pernicious Anæmia.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Agar-street, W.C.
SUNDAY, Feb. 22nd.—10.30 A.M., Mr. E. D. D. Davis: Examination of Nose, Ear, and Throat. 11.45 A.M., Dr. F. H. Young: Old and New Methods in Treatment of Pneumonia.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE (Public Health Division), Keppel-street, Gower-street, W.C.
MONDAY, Feb. 23rd.—5 P.M., Mr. T. Dunlop Young: Meat Inspection. 6 P.M., Prof. E. Cathcart: The National Diet.
TUESDAY.—6 P.M., Prof. Cathcart: National Diet. (Last Lecture).
WEDNESDAY.—5 P.M., Mr. T. Dunlop Young: Meat Inspection (continued).

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL.
WEDNESDAY, Feb. 25th.—4 P.M., Dr. Adolphe Abrahams: Indigestion.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.
FRIDAY, Feb. 27th.—4 P.M., Mr. W. A. Mill: Giddiness.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.
TUESDAY, Feb. 24th.—3.15 P.M. (at the Royal Chest Hospital), Dr. J. Maxwell: Winter Cough.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James's Hospital, Ouseley-road, Balham, S.W.
WEDNESDAY, Feb. 25th.—4 P.M., Dr. W. J. O'Donovan: Tumours of the Skin and Their Treatment.

CITY OF LONDON MATERNITY HOSPITAL, City-road, E.C.
THURSDAY, Feb. 26th.—5 P.M., Mr. A. L. Waller: The Treatment of Tumours Associated with Pregnancy and Labour.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, Feb. 23rd.—2.30 to 5 P.M.: Medical, Surgical, and Gynæcological Clinics. Operations.
TUESDAY.—2.30 to 5 P.M.: Medical, Surgical, Ear, Nose, and Throat Clinics. Operations.
WEDNESDAY.—2.30 to 5 P.M.: Medical, Skin, and Eye Clinics. Operations.
THURSDAY.—11.30 A.M.: Dental Clinics. 2.30 to 5 P.M.: Medical, Surgical, Throat, and Ear Clinics. Operations.
FRIDAY.—10.30 A.M.: Ear, Nose, and Throat Clinics. 2.30 to 5 P.M.: Medical, Surgical, and Children's Diseases Clinics. Operations.

HOSPITAL FOR EPILEPSY AND PARALYSIS, Maida Vale, W.9.
THURSDAY, Feb. 26th.—3 P.M., Dr. F. L. Golla: Clinical Demonstration.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.
TUESDAY, Feb. 24th.—5 P.M., Dr. J. A. Drake: Leprosy.
THURSDAY, 5 P.M., Dr. J. E. M. Wigley: Leukæmia Cutis. Mycosis Fungoides.

CHADWICK PUBLIC LECTURES.
TUESDAY, Feb. 24th.—8 P.M. (in The Royal Sanitary Institute, 90, Buckingham Palace-road, S.W.), Mr. E. A. Elsby: Silicosis Prevention Methods.

GRESHAM COLLEGE, Basinghall-street, E.C.
TUESDAY, Feb. 24th, and following WED., THURS., and FRI.—6 P.M., Sir G. Newman: Four Lectures on the Programme of the Public Health Service.

ST. MARY'S HOSPITALS, Manchester.
FRIDAY, Feb. 27th.—4.15 P.M. (at the Whitworth-street West Hospital), Dr. Lacey and Dr. Addis: Antenatal Demonstrations.

MANCHESTER ROYAL INFIRMARY POST-GRADUATE COURSE.
TUESDAY, Feb. 24th.—4.15 P.M., Dr. F. R. Ferguson: Disseminated Sclerosis.
FRIDAY.—4.15 P.M., Mr. C. Roberts: Demonstration of Surgical Cases.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINIC.
FRIDAY, Feb. 27th.—3.30 P.M. (at the Royal Hospital), Dr. Skinner: Nervous Disorders of the Heart.

Appointments

DOBSON, MARJORIE M., M.B., B.S. Lond., has been appointed Resident Medical Officer to the Minehead and West Somerset Hospital.

LAURIE, A. R., M.B., Ch.B. Edin., Radiologist to the Derbyshire Hospital for Women.

MACKAY, G. W. J., M.B., Ch.B. Edin., D.P.M., Medical Superintendent to the Institutions under the Somerset County Council Mental Deficiency Committee.

The Mount Vernon Hospital, Northwood: ADIE, W. J., M.D. Edin., F.R.C.P. Lond., DUKE-ELDER, W. S., M.D. Lond., F.R.C.S. Eng., and WILLIAMS, BERNARD, M.B., B.Ch. Oxon., F.R.C.S. Eng., members of the Hon. Medical Staff.

Certifying Surgeons under the Factory and Workshop Acts: FIDDES, J. C. T., M.B., Ch.B. Manch. (Rayleigh, Essex); NORMAN, B. N., F.R.C.P. Lond., M.R.C.S. (Havant, Southampton); RIDDOLLS, L.R.C.P. Lond., M.R.C.S. (Strensall, North Riding).

Vacancies

For further information refer to the advertisement columns.

Birmingham, Selly Oak Hospital.—Radiographer. £250.
Bootle General Hospital.—Sen. Res. M.O. Also Two Jun. H.S.'s. At rate of £200 and £150 respectively.
Bradford, Municipal General Hospital, St. Luke's.—H.P.'s and H.S.'s. Each at rate of £200.
Cambridge University.—E. G. Fearnside Scholarship for Clinical Research, &c.
Cardiff Isolation Hospital.—Res. Asst. M.O. £150.
Carlisle, Cumberland Infirmary.—Second H.S. Also H.S. to Spec. Depts. Each at rate of £155.
Central London Throat, Nose, and Ear Hosital, Gray's Inn-road, W.C.—Hon. Assts. for Out-patient Dept.
Connaught Hospital, Walthamstow.—Secretary. £400.
Doncaster Royal Infirmary.—H.S. At rate of £175.
Durham County Council.—Asst. School M.O. £500.
East Ham Memorial Hospital, E.—Hon. Ophthal. Surgeon.
Edinburgh Mental Health Services.—M.O. £1000–£1250.
Exeter, Princess Elizabeth Orthopædic Hospital.—Orthopædic Surgeon. £600.
Freemasons Hospital and Nursing Home, 237, Fulham-road, Chelsea, S.W.—Res. M.O. At rate of £250.
General Lying-in Hospital, York-road, Lambeth, S.E.—Res. M.O. At rate of £100.
Gloucestershire Royal Infirmary and Eye Institution.—2nd H.S. At rate of £120.
Great Yarmouth General Hospital.—Jun. H.S. At rate of £140.
Golden-square Throat, Nose, and Ear Hospital, W.—Hon. Asst. Surg. Also H.S. £100.
Gravesend and North Kent Hospital.—Jun. H.S. At rate of £100.
Hertford, Borough of.—M.O.H. £800.
Hospital for Sick Children, Great Ormond-street, W.C.—Res. Med. Supt. £300.
Hull Royal Infirmary.—H.P. for Sutton Branch. At rate of £160.
Ilford, King George Hospital.—H.S. At rate of £100.
Ipswich, East Suffolk and Ipswich Hospital.—H.S. and H.P. Each at rate of £120.
Isleworth.—District M.O. £140. Also Public Vaccinator.
Leeds University, Department of Pathology and Research.—Lecturer in Pathology. £500.
Leicester Royal Infirmary.—H.S. and Cas. O. Also Second H.P. Each £125.
Liverpool, David Lewis Northern Hospital.—H.S. two H.P.'s. Each at rate of £100.
London Hospital, E.—Asst. Obstet. and Gyn. Surgeon.
Manchester, Ancoats Hospital.—Res. M.O. At rate of £150.
Manchester and District Radium Institute, Nelson-street.—Director for Radium Institute.
Manchester Babies Hospital, Burnage-lane, Levenshulme.—Jun. Res. M.O. At rate of £150.
Manchester Northern Hospital for Women and Children, Park-place, Cheetham Hill-road.—Sen. and Jun. H.S. £130. and £100 respectively.
Manchester Royal Children's Hospital, Pendlebury.—Res. M.O. and Res. Surg. O. Each at rate of £125. Also Two Asst. M.O.'s for Out-patients' Department, Gartside-street. Each at rate of £150.
Manchester, Victoria Memorial Jewish Hospital, Cheetham.—Jun. H.S. At rate of £125.
Margate and District General Hospital.—Res. M.O. £125.
Miller General Hospital, Greenwich-road, S.E.—Res. Surg. O. and Reg. £250.
National Hospital for Diseases of the Nervous System, Queen-square, W.C.—Hon. Officer for Speech Defects.
Newark General Hospital.—Res. H.S. £175.
Newcastle-upon-Tyne Hospital for Sick Children.—H.P. Also Sen. and Jun. H.P. All at rate of £100.
Newcastle-on-Tyne, Royal Victoria Infirmary.—Temporary Med. Reg. and Res. Anæsthetist at rate of £250 and £100 respectively. Also Anæsthetist. £100.
New End Hospital, Hampstead, N.W.—Sen. Asst. M.O. £500. Also Asst. M.O. £350.
Northampton General Hospital.—H.S. Also Two Asst. H.S.'s. All at rate of £150.
Norwood and District Cottage Hospital.—Hon. Surgeon.
Nottingham, City Mental Hospital.—Deputy Med. Supt. £650.
Oldham Royal Infirmary.—H.S.'s to Special Depts. Each at rate of £175.
Poplar, Metropolitan Borough of.—Asst. M.O.H., Tuberculosis Section. £600.
Prince of Wales's General Hospital, N.—Hon. Surg. Reg. £100.
Queen's Hospital for Children, Hackney-road, E.—Cas. O. At rate of £100. Also Clin. Asst. 5s. per attendance.
Reigate, Borough of.—M.O.H., School M.O. and M.O.H. of Infant Welfare Centre. £800.
Royal Chest Hospital, City-road, E.C.—Clin. Asst. for Out-patient Department.
Royal National Orthopædic Hospital, 234, Great Portland-street, W. H.S. At rate of £150. Also H.S. for Country Branch, Brockley Hill, Stanmore. At rate of £150.
St. John's Hospital for Diseases of the Skin, 49, Leicester-square, W.C.—Sen. and Jun. Hon. Med. Registrars.
St. Thomas's Hospital.—Res. Asst. Phys.
Salford Royal Hospital.—Registrar to Orthopædic Dept. £100.
Salisbury, General Infirmary.—Two H.S.'s and H.P. Each £150. Also Hon. Asst. Surgeon.
Sheffield, Royal Hospital.—Ophth. H.S. £120. Also Res. Anæsthetist. £80–£100.
Sidcup, Kent, Queen Mary's Hospital.—Asst M.O. £250.
Society of Apothecaries of London, Water-lane, Queen Victoria-street, E.C.—Four Examinerships.
Southampton, Royal South Hants and Southampton Hospital.—Cas. O. At rate of £180.
Sutton, Surrey, Sutton and Cheam Hospital.—Hon. Radiologist.
Swanley, Kent, Hospital Convalescent Home.—Res. M.O. At rate of £200.
Swansea General and Eye Hospital.—Cas. O. £200.
Tunbridge Wells and Counties General Hospital.—H.S. £160.
West London Hospital, Hammersmith-road, W.—H.P., Two H.S.'s, and One Res. Anæsthetist. All at rate of £100.
Westminster Hospital, Broad Sanctuary, S.W.—Surg. Reg. £150. Also Obstet. Tutor and Registrar. £100.
Weston-Super-Mare General Hospital.—Res. H.S. At rate of £150.
Winchester, Royal Hampshire County Hospital.—H.P. At rate of £150.
Windsor, King Edward VII. Hospital.—Res. M.O. £200. Also H.S. £100.
Woolwich Metropolitan Borough.—Asst. M.O. for Public Health Department. £600.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Leyburn (Yorks, N. Riding).

NOTES, COMMENTS, AND ABSTRACTS

THE PSYCHOLOGICAL FACTOR IN DELINQUENCY.

AT a meeting held at Friends House, Euston-road, on Jan 23rd, Dr. Isabel Wilson, who occupied the chair, explained that the Committee on Psychological Medicine of the Medical Women's Federation had recently discussed the subject of delinquency. As a result of this discussion it had seemed reasonable to arrange for a meeting between the committee and certain probation officers who were interested in a psychological course given for them at the Tavistock Clinic.

Dr. MARY BARKAS (The Lawn, Lincoln) said that there were two points that she would like to hear discussed: What is being done? and what ought to be done for the different types of case with which probation officers have to deal? A certain proportion of cases were sent to remand homes or put into supervised occupations; a considerable number did quite well under those conditions. Psychiatrists found that the difficulty with their patients was often mainly one of environment, and nervous disorder might disappear if the environment were adjusted. There had been much dispute about the problem of the existence of moral deficiency. Dr. Barkas thought that there were certain types of high-grade defectives with a good general intelligence whose capacity for developing wisdom and judgment did not reach beyond the stage of reward and punishment. She would like to hear the opinion of probation officers on how these cases responded to the various methods of treatment. They seldom benefited much from individual intensive psychotherapy. It seemed that some adjustment of the reward and punishment mechanism was what would lead them towards the best citizenship of which they were capable. A second difficult type was the psychopathic or neurotic delinquent suffering from obsessions, compulsions, anxiety, or morbid fear. These definitely responded to treatment if it was available. But if they were to be treated they needed to be in some protected environment while the treatment was going on. Dr. Barkas would like to know how far probation officers found that there was a lack of facilities of this kind. There were very few places where a child could be sent for this sort of treatment.

Difficulties of the Magistrate.

Mrs. RACKHAM (Cambridge) said that in looking back over 10 years on the bench one of the things by which she was most struck was the contrast between the court as a machine for finding out whether the prisoner was guilty or not, and the court as a machine for finding out anything at all about the prisoner. In the first capacity it was very good—not perfect, but as a rule it found out the truth. But—and a very big "but" it was—it was a very ineffective instrument indeed when it came to knowing anything about the prisoner, especially about his mind; why he did it, whether he was likely to do it again, and how to prevent him from doing it again.

Magistrates found it very difficult to know in what cases to seek expert information. They could not tell from the look of the prisoner—nobody looked his best in the dock—and unless he presented an imbecile appearance the magistrates did not know whether he was a mental case or not.

When was the best time to call for a mental report? It was agreed that this was after the case had been proved and before sentence was passed. At that point it was possible to obtain the prisoner's record and sometimes to gather useful information from items in it, such as the school standard reached and any history of institutional care.

The question arose: Where was the examination to be made? The only place to which a prisoner could be remanded when he was over 16 years of age was prison—a very unsuitable place for a mental examination. The surroundings might be equally bad in the home, where the relatives might be hostile to the whole idea of examination. There was a very great need for some more suitable place to send cases on remand. There were homes for children under 16, but these were very often at the police station or at a poor-law institution, neither of which was ideal for the purpose.

The next question was: Who was to make the examination? There was a difficulty in securing a mental specialist, and the obvious person was the prison medical officer or police surgeon. In a small place he would be a practitioner of the town, who might not have special experience in this work. A further complication was the question of fees. Having taken the trouble and expense to get a report the magistrate did not now know how to act on it. There might be no local facilities whatever for treatment. If the child was to be taken to a child-guidance clinic there must be somewhere for it to live while it was attending. Against all these difficulties there was the temptingly simple alternative of proceeding to penalty.

The Committee on Offences against Children and Young Persons had found cases in which a man had been sent to prison for the same kind of sexual offence 10, 13, and 15 times with a occasional flogging thrown in. It was essential to find some better and more scientific way of dealing with problems of that kind. Another difficulty was that all magistrates did not yet grasp the importance of this kind of mental work. They were apt to regard it either as an attempt to shut people up or as an attempt to undermine and weaken man's responsibility.

Mrs. STORMONT (Probation Officer, Gt. Marlborough-street Police-station) spoke on types of delinquent and described her work with shoplifters and prostitutes in the West End.

Mr. CHINN (Probation Officer, Birmingham) spoke on the

Inter-relation of the Magistrate, Doctor, and Probation Officer.

There was great need, he said, for coöperation between magistrate, doctor, and probation officer in the treatment of delinquency. It was apparent that there was a growing concern for the right treatment of delinquency, but a wide diversity of opinion as to what constituted right treatment. A small minority of advanced opinion was concerned with the scientific application of expert knowledge to the problem and, on the other hand, traditional repressive measures widely used. In between these two extremes were several experiments, more or less developed, the aim of which was the reformation of the delinquent. Probation represented the community's attempt to reform the offender by a process of re-education in his own environment. Such a process would depend for its success on the coördinated contributions of what might be called the "healing" forces of the community, which would include the magistrate, the doctor, and the probation officer, and it would have to be used with discrimination. Probation should never be used without first taking into account the personal and environmental history of the offender and his physical and mental condition. There was still an impression in the minds of some magistrates that probation might be all very well for children and young persons, but it was useless applying it to adults. It was even exceptional for investigations to be made in children's cases apart from one or two of the large cities children were tried and dealt with forthwith. The only method open to the court needing medical advice was often to remand the offender in custody for an examination by the local prison medical officer, but even where this was done the quality of the advice given might detract from its value and the court soon lost confidence in unsatisfactory reports. Certain local prisons were listed as

observation centres and had mental experts on their staffs. Such centres were more often used by the large towns than the rural districts and their scope was limited. The period of observation was bound to be short. The doctor's report might contain an accurate diagnosis of the offender's mental condition, but it rarely contained a practical recommendation and no provision was made for treatment. Treatment, of a sort, might be obtained from the poor-law authority if the offender was destitute or could be made to appear so, and certain obvious cases could be dealt with in the county mental hospitals. There was evidence that the administration of the Mental Deficiency Act was far from satisfactory in many counties.

The number of mental experts qualified to give advice and treatment seemed to be surprisingly small, and they were seldom available outside the large cities. Mental experts too often confined themselves to a diagnosis, and gave no constructive help on treatment.

If the reformative material available was to be used wisely and effectively it was essential to realise the interdependence of the court, the doctor, and the probation officer and to ensure their coöperation.

The Clinic for the Delinquent Child.

Dr. FLORENCE STACEY-CLEMINSON (Hull) asked whether a clinic for children would not be better started from the educational side as a school clinic to which the courts could send children rather than in connexion with the children's court. The children would not then be branded. Hull was trying to get the education authority to set up a clinic, but there were financial difficulties. At present, cases were sent to the psychologist attached to University College, but there was no definite clinic.

Mr. CHINN said that in Birmingham there was as yet no place to send children for psychological treatment, but it was hoped that one would soon be started by the education authority. It was much better for an outside authority to conduct this than for the court to have its own clinic.

Dr. WILLIAM MOODIE (London) said that neither court nor school authority was the proper person to conduct a clinic. The work could not be done by any one individual, either psychologist, doctor, or social worker. These people must be available both separately and together, and they must coöperate. Every child was an individual and at the same time a school child, and had two aspects. One could be dealt with by the doctor, the other must be dealt with by the educational psychologist.

In his work at the Child-Guidance Clinic he had found that the vast majority of delinquency resulted from environmental causes and not from a cause intrinsic in the individual. This introduced a third type of investigation—skilled social environmental investigation. What really seemed to matter was the environmental factor, and by manipulating the environment and the education it was possible to alter the behaviour in the desired direction. He wished to stress the point that the examination of delinquents was not purely a medical question.

A number of probation officers and magistrates took part in the subsequent discussion and contributed their personal experiences. There was very general agreement on the need for increased coöperation between magistrate, probation officer, and doctor, and for the education of public opinion on the very important problem of the psychological aspect of delinquency. It was agreed that further meetings should be held.

VICIOUS CIRCLES IN DISEASE.

IN an address to the Osler Club on Feb. 13th entitled "The Dynamic and the Modern Procedure of Diagnosis," Dr. A. P. Cawadias opened with a tribute to Dr. J. B. Hurry who "with one foot in the grave" had worked on general ideas in medicine. Just before his death Dr. Hurry had asked him to help in the preparation of a new edition of his "Vicious Circles in Disease." The basis of the modern conception of disease, said Dr. Cawadias, was the knowledge of the integration of the human body, which we owe mainly to the work of British physiologists. Man is integrated to respond as a whole to any adequate stimulus by the psychoneuro-endocrinic system. When the response to the environment is perfect, the various organs and functions which constitute man are in equilibrium. This is the condition of health. When adaptation is imperfect, either because the environmental changes are too intense, or the power of adaptability of body or mind is insufficient, disease or functional dissociation results. Each diseased individual represents a chain of morbid events in which four links are to be distinguished. The first is the link of external ætiological factors and represents the modification of environment—invasion of microbes, toxins, meteorological factors, &c. The second is the link of constitutional factors, the third that of psychoneuro-endocrinic syndromes, and the fourth that of the organ syndromes—functional disturbances and anatomical lesions which follow the disturbances of the psychoneuro-endocrinic system. This new conception of the general mechanism of disease is intimately connected with a new procedure of diagnosis, the neo-Hippocratic diagnosis of the person, which determines the four links in the chain of morbid events. A complete collection of Hurry's scientific and other writings was displayed.

UNOFFICIAL AUNTS.

WE have been reminded of the existence in Manchester of a panel of voluntary unofficial aunts (V.U.A.) who are willing to do such useful services as staying in the house in charge of children to enable the parents to go out together for an hour or two; to take children to the doctor, dentist, or hospital; to visit old or feeble people, read to them or play a game with them, and so occasionally give relief to the one in charge, to sew or mend garments. We are told that the V.U.A. are purely voluntary workers who accept no responsibility, but do their best to be of service, although not prepared to replace ordinary domestic labour or trained nursing. The service is done without subscription or payment of any kind. Information is spread by an occasional open meeting such as that to be held at 7, Darley-avenue, West Didsbury, Manchester, on March 27th, at which the Lady Mayoress will preside. Applications for information or help should be addressed to Mrs. E. W. Hardy at that address. (Tel.: Didsbury 3331.)

Births, Marriages, and Deaths

BIRTHS.

GILLESPIE.—On Feb. 8th, at Bentinck-street, the wife of Dr. R. D. Gillespie, of Wimpole-street, W., of a daughter (premature, stillborn).

ROBERTS.—On Feb. 15th, at Fairmead, Formby, to the wife of Dr. E. L. Roberts—twin daughters.

MARRIAGES.

WARNER—ALLSOP.—On Feb. 14th, at All Souls', Langham-place, W., Edwin Charles Warner, M.D., M.R.C.P., of Devonshire-place, W., to Mary Dorothea (Dora), eldest daughter of James Allsop, Esq., J.P., of Putney.

DEATHS.

FELDMAN.—On Feb. 11th, at Hodford-road, Golders Green, Dr. Israel Feldman.

HORNER.—On Saturday, Feb. 14th, suddenly, Charles Julian Horner, M.D., of Orford-road, Walthamstow, aged 67.

RUSSELL.—On Feb. 11th, at The Oaks, Yateley, James Russell, M.D., M.R.C.S., aged 79.

TURNER.—On Feb. 12th, at Ascot, Arthur Ernest Turner, aged 35, of 15, Litchfield-road, Sutton, youngest son and for many years Assistant Manager to Percival Turner, of 4 and 5, Adam-street, W.C.2.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages and Deaths.

NEW MATERNITY WARD AT RAMSGATE.—Dame Janet Stancomb-Wills presided recently at the opening of the new maternity ward she has presented to the Ramsgate Hospital. The maternity department is now a complete hospital in itself, containing 25 cots and beds.